

Southampton to London Pipeline Project

Deadline 4

Appendix 13.3 Noise and Vibration Technical Note
Addendum

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1 Appendix 13.3 Noise and Vibration Technical Note Addendum

1.1 Introduction

1.1.1 An assessment of potential noise effects during the installation of the Southampton London Pipeline Project ('the project') was presented in Appendix 13.3 Noise and Vibration Technical Note to the Environmental Statement (ES) (**Application Document APP-121**) submitted to the Planning Inspectorate in May 2019. Since the publication of the ES, the project has continued to develop its construction methodologies, the assumptions that underpin the assessment have been refined, and a more detailed understanding of the proposed works is now available. This is presented within this Addendum (**Application Document 8.14 (2)**).

1.1.2 This Addendum aims to provide the following:

- an updated assessment of noise during installation based on the refinements of the assumptions and a more detailed understanding of the proposed works;
- detailed information on the location of noise sensitive premises and areas that may experience noise effects during installation, in accordance with the requirements of the relevant National Policy Statements; and
- details of the potential mitigation measures that will form part of the Noise and Vibration Management Plan prepared prior to installation.

1.1.3 Revision 2.0 of this Addendum provides an update of the assessment results based on the revision to the adopted significance threshold, following representations made at the Issue Specific Hearing on Environmental Matters on Wednesday 4th December 2019.

1.1.4 Revision 2.0 of this Addendum also provides a more detailed analysis of the noise reduction that would be provided by the proposed noise barriers.

1.2 Refinement of Modelling Assumptions

1.2.1 As stated above, since the publication of ES Appendix 13.3 Noise and Vibration Technical Note, various assumptions that underpin the noise modelling have been refined.

Assumed Working hours

1.2.2 Commitment G5 has been updated following comments raised at the Issue Specific Hearings in December 2019. Commitment G5 now states that '*Construction would take place during the normal working hours of 08:00 to 18:00 Monday to Saturday. Sunday or Bank Holiday working is not anticipated as being typical. Exceptions may be required for extended hours (including where necessary working on a Bank Holiday and Sunday or Bank Holiday for activities such as: the continuous pulling phase for a major crossing using HDD; where daytime working would be excessively disruptive to normal traffic operation; cleaning/testing of the pipeline; or overnight*



traffic management measures'. This is secured through DCO Requirement 14 (Working Hours).

- 1.2.3 The assessment presented in ES Appendix 13.3 assumed that night working would occur throughout the installation period at all trenchless sites, compounds and logistics hubs. This Technical Note refinement recognises that night working would be the exception (in line with Commitment G5); it would not occur throughout the installation period at all trenchless sites, compounds and logistics hubs. Therefore, this assumption has been refined and night working has been removed from the noise assessment presented in this Technical Note.

Assumed Location of the Pipeline Route in Open Cut Sections

- 1.2.4 Within the noise model, a 'line source' has been used to represent the spatial average over the assessment period of equipment used for open cut sections, and to calculate distance to receptors. In the assessment presented in ES Appendix 13.3, the line source was located along a hypothetical pipeline route. This has since been refined, and the line source is now located at the centre line of the Order Limits. This location has been chosen for the following reasons:
- The use of the centre line is a transparent approach derived solely from information presented within the DCO Application; and
 - A review of the work techniques indicates that the centre line is judged to be a reasonable estimate of the spatial average of the equipment location over the assessment period. Where the pipeline route is at or near the Order Limits, the equipment associated with the various installation activities is expected to be located over a wider area between the Order Limits.
- 1.2.5 The locations of trenchless crossings are represented by 'point sources' at the proposed location of the crossings, rather than 'line sources'. Similarly, compounds and logistics hubs are represented by 'area sources' at the proposed sites. The locations of these activities are therefore unchanged from those assumed in ES Appendix 13.3.

Assumed Activities

- 1.2.6 The assessment presented in ES Appendix 13.3 assumed that various installation activities would occur along the entirety of 'typical rural' and 'typical urban' open cut sections. Following a review of installation methods, the following changes have been made:
- Vegetation removal, involving the use of a chainsaw and strimmer has been included at locations where sustained woodland clearance would require use of power tools.
 - The construction of a haul road has been removed from 'typical rural' sections as the project assumption is that *'Where soils are suitable, the haul roads would be formed from the exposed subsoil'* (para 3.4.38 in ES Chapter 3). It is reasonable to assume that suitable soils would be encountered along the vast majority of the route, and that no plant would be required in addition to that already included for the topsoil stripping activity.



- Trial holes have been removed from 'typical urban' sections, as only a limited number would be required in discrete locations. The digging of any trial holes would occur in advance of the other activities and would not combine with other activities within a month at any location.

1.2.7 The revised list of activities is presented in Tables 1.1 – 1.3.

Selection of representative plant from BS5228-1

1.2.8 The standard BS 5228-1:2009+A1:2014 (BSI, 2014) contains a database of plant items and their associated noise levels. As part of the assessment presented in ES Appendix 13.3, a selection from this database was made for each item of plant expected to be used during installation. A conservative example from the database was selected for each item, in order to assess a worst case within the ES.

1.2.9 Further work has been undertaken to understand the types of equipment likely to be used and the selections have been refined based on this information. Certain types of machinery have been substituted for a more appropriate / typical item of plant where there was not a comparable item of plant in BS 5228-1:2009+A1:2014 (BSI, 2014). Where this is the case, noise data have been taken from manufacturers' specifications of models judged to represent the industry standard.

1.2.10 Examples where plant has been reselected are described as follows:

- Smaller tracked excavator assumed for excavation, pipe laying and backfill – the original assessment assumed a 30t tracked excavator when it is more likely that a smaller (approximately 14t) tracked excavator would be used for this type of installation.
- Commitment G24 states that '*In the absence of a mains electricity supply, super silent pack generators would be used as an alternative power supply. A generator shall be considered 'super silent' if it meets the following criteria:*
 - *has a maximum noise output of 69 dB(A) at 7m;*
 - *is fitted with a silencer in the diesel combustion exhaust system; and*
 - *includes a layer of barrier material within the casing of the generator to reduce noise breakout.'*

The updated modelling therefore reflects the use of low noise generators.

- Sheet piling is included at locations identified in commitment W13 from the REAC, presented in ES Chapter 16. These locations are where it has been identified that sheet piles may be required to control groundwater ingress. For these works the most likely method would be to push sheets in with the arm of an excavator. The areas where this method would be required are areas with high groundwater and therefore with soft ground. The data in BS 5228-1:2009+A1:2014 for hydraulic piling in clay has therefore been adopted.

1.2.11 Plant items that have been reselected are highlighted in red in Tables 1.1 – 1.3.



Updated Input Data for Calculation of Noise during Installation

- 1.2.12 Input data to the calculations of noise during installation reported in the ES are presented in Tables 5.1 - 5.3 of ES Appendix 13.3. The revised input data used in this assessment are presented in Tables 1.1 – 1.3 of this assessment.
- 1.2.13 As well as changes to the activities and plant selections described above, minor changes to vehicle passage numbers and vehicle speeds have been made to reflect the best available understanding of the works.

Durations of Activities Adjacent to Receptors

- 1.2.14 For each activity, a number of days that each installation activity could occur adjacent to a receptor was assumed (see Table 5.5 of Appendix 13.3). This conservative factor was included due to a lack of certainty at the time of assessment regarding how works would progress. As it is now confirmed that mobile works (i.e. all works other than at compounds, logistics hubs and trenchless crossings) will make continuous progress along the route, this factor has been removed for these activities.



Table 1.1: Calculation of Average Daily Activity Noise Levels (Typical Rural Open Cut Sections)

Activity	Equipment										Activity L _{Aeq} at 10m, dB
	Project Plant Description	BS 5228 Ref. for Closest Available Substitute Plant	L _{WA} , dB	% On-time	Corrected L _{WA} , dB	No. Passages per Day	Progress (m / day)	No. Passages per Hour	Speed (km/h)	Adjusted L _{Aeq} at 10m, dB	
Fencing	Tractor	C4.75	107	100	107	1	200	0.125	5	48	65
	Post Rammer	-	113	1	93	1	200	0.125	0.025	57	
	Nail Gun	-	120	1	100	1	200	0.125	0.025	64	
Vegetation Removal *	Chainsaw	-	116	100	116	1	200	0.125	0.025	80	81
	Strimmer	-	108	100	108	1	200	0.125	0.025	72	
Topsoil strip	Tracked excavator 25t	C2.19	105	100	105	1	100	0.125	0.0125	72	72
Pipe stringing	Tractor	C4.75	107	100	107	5	-	0.625	5	55	68
	Lorry	C2.34	108	100	108	1	250	0.125	5	49	
	Tracked excavator 25t	C2.19	105	100	105	1	250	0.125	0.03125	68	
Pipe welding	Welding generator	C3.33	85	100	85	1	50	0.125	0.00625	55	65
	Angle Grinder	C4.93	108	5	95	1	50	0.125	0.00625	65	
Excavation	Tracked excavator 14t	C2.25	97	100	97	2	100	0.25	0.0125	67	67
Pipe laying	Tracked excavator 14t	C2.25	97	100	97	2	90	0.25	0.01125	67	67
Backfill	Tracked excavator 14t	C2.25	97	100	97	2	100	0.25	0.0125	67	67
Compaction	Vibratory roller	C2.40	101	100	101	2	100	0.25	0.0125	71	71
Re-instatement	Tracked excavator 14t	C2.25	97	100	97	1	70	0.125	0.00875	66	66
	Tractor	C4.75	107	100	107	1	70	0.125	5	48	

* Activity only included at locations where sustained woodland clearance would require use of power tools



Table 1.2: Calculation of Average Daily Activity Noise Levels (Typical Urban Open Cut Sections)

Activity	Equipment										Activity LAeq at 10m, dB
	Project Plant Description	BS 5228 Ref. for Closest Available Substitute Plant	L _{WA} , dB	% On-time	Corrected L _{WA} , dB	No. Passages per Day	Progress (m / day)	No. Passages per Hour	Speed (km/h)	Adjusted L _{Aeq} at 10m, dB	
Main laying	Saw	C4.73	112	25	106	1	18	0.125	0.00225	80	84
	Hydraulic breaker	C5.1	116	10	106	1	18	0.125	0.00225	80	
	Wheeled Excavator	C2.25	97	100	97	1	18	0.125	0.00225	71	
	Dumper (removal)	C4.3	104	100	104	4	18	0.5	5	51	
	Dumper (bedding)	C4.3	104	100	104	4	18	0.5	5	51	
	Pipe delivery lorry	C2.34	108	100	108	1	18	0.125	5	49	
Pipe welding	Welding generator	C3.33	85	100	85	1	18	0.125	0.00225	59	70
	Angle Grinder	C4.93	108	5	95	1	18	0.125	0.00225	69	
Backfill	Dumper	C4.3	104	100	104	4	18	0.5	5	51	78
	Vibratory roller	C2.40	101	100	101	2	18	0.25	0.00225	78	
Re-instatement	Dumper	C4.3	104	100	104	4	18	0.5	5	51	78
	Vibratory roller	C2.40	101	100	101	2	18	0.25	0.00225	78	



Table 1.3: Calculation of Average Daily Activity Noise Levels (Typical Construction Compounds, Logistics Hubs and Trenchless Locations)

Activity	Equipment							Activity L _{Aeq} at 10m, dB
	Project Plant Description	BS 5228 Ref. for Closest Available Substitute Plant	L _{WA} , dB	% On-time	Corrected L _{WA} , dB	No. Plant Items	Adjusted L _{Aeq} at 10m, dB	
Construction compound / Logistics Hub installation	Tracked excavator 25t	C2.19	105	100	105	1	77	80
	Delivery lorry for geotextile material	C2.34	108	10	98	1	70	
	Rolling and compaction	C5.22	109	25	103	1	75	
Construction compound / Logistics Hub usage	Generator for site cabins	C4.78	94	100	94	1	66	76
	Lorry for delivery of materials	C2.34	108	10	98	1	70	
	Dumper for movement of materials	C4.3	104	25	98	1	70	
	Excavator for movement of materials	C2.19	105	25	99	1	71	
HDD trenchless crossing sites	Generator for site cabins	C4.78	94	100	94	1	66	80
	Generator for HDD	C4.96	105	100	105	1	77	
	Drilling equipment	C3.17	104	100	104	1	76	
Auger Bore trenchless crossing sites	Generator for site cabins	C4.78	94	100	94	1	66	79
	Excavation of pit	C2.16	103	50	100	1	72	
	Dumper for movement of materials	C4.3	104	10	94	1	66	
	Generator for drill	C4.96	105	100	105	1	77	
Sheet Piling *	Vibratory piling rig	D4.12	93	40	89	1	61	61

* At locations identified in commitment W13 from the Register of Environmental Actions and Commitments (REAC), presented in ES Chapter 16. These locations are where it has been identified that there could be groundwater ingress and therefore sheet piles may be required.

1.3 Revisions to adopted significance threshold

Explanation of previously adopted thresholds

- 1.3.1 The noise assessment is presented in Environment Statement Appendix 13.3 (**Application Document APP-121**) and in Appendix 13.3 Noise and Vibration Technical Note Addendum (**Application Document 8.14**). In this assessment, a significance threshold of 70 dB(A) for rural areas, and 75 dB(A) for urban areas has been adopted. Urban and rural areas have been classified using the Office for National Statistics 2011 Rural - Urban Classification (Office for National Statistics, 2011).
- 1.3.2 The adopted criteria are informed by the guidance provided in the Department of Environment advisory leaflet AL72 'Noise control on building sites' (Department of Environment, 1976). The categories described in AL72 are as follows:
- 70 dB(A) in rural, suburban and urban areas away from main road traffic and industrial noise
 - 75 dB(A) in urban areas near main roads and heavy industrial areas.
- 1.3.3 These categories and thresholds have their origins in the Wilson Committee Report (Wilson Committee on the Problem of Noise, 1963), and are based on achieving a level of 55 dB(A) indoors, which was considered by the Wilson Committee to avoid interference with speech. The external level of 70 dB(A) was derived from the 55 dB(A) internal level plus a 15 dB difference between indoor and outdoor levels for closed but ill-fitting windows. The level of 75 dB(A) was recommended near main roads and heavy industrial areas as existing noise levels in these areas was considered likely to exceed 70 dB(A).
- 1.3.4 Window design and specification is very different now to 1963, with the majority of properties now having well-fitting thermal double glazing as a minimum. The World Health Organization's Environmental Noise Guidelines for the European Region (WHO, 2018) as well as former Planning Policy Guidance PPG24 (Department of the Environment, 1994) suggest that a difference between indoor and outdoor levels of 25 dB should be assumed for rooms with closed windows.
- 1.3.5 In this context, the adoption of a significance threshold of 75 dB(A) for urban locations is considered to achieve the intent of the Wilson Committee, regardless of the proximity to main roads and heavy industrial areas.

Revised threshold

- 1.3.6 Notwithstanding the above, in response to representations made at the Issue Specific Hearing on Environmental Matters, the Applicant has revised the classification of receptors to provide a precautionary approach to the assessment. The threshold of significance for noise during installation of 70 dB(A) has now been adopted for all residential receptors.

1.4 Results of the Assessment

Changes to the noise environment associated with the proposed development

1.4.1 The noise environment in the vicinity of certain installation activities would be influenced by the activities being undertaken. The type of noise associated with installation activities depends on the type of equipment and task:

- For heavy plant such as excavators, bulldozers, dump trucks and lorries the main source of noise is the operation of a diesel engine. Diesel engine noise is typically dominated by their exhaust systems, and are often described as having a 'clattering' sound.
- For petrol-driven equipment such as chainsaws and strimmers the main source of noise is the petrol engine itself. Petrol engines emit a more tonal, higher pitched noise compared to diesel engines, due to their higher rotational speed.
- For activities such as angle grinding and breaking road surfaces, noise will principally be caused by the repetitive interaction of different surfaces. Instantaneous noise levels from these types of activity have the potential to be relatively high, when compared to other types of activity.
- For horizontal directional drilling (HDD) and auger bore operations, noise will principally be caused by a combination of diesel power generators, pumps and motors.

1.4.2 As the activities would steadily progress along the pipeline route, the noise from each activity would only be experienced for a relatively short period of time.

Assessment of effects at sensitive receptors

1.4.3 The approximate number of receptors expected to experience noise effects during installation was presented in Table 6.1 of ES Appendix 13.3 for the scenario without noise-reducing measures. Tables 6.2 - 6.3 presented an estimate of the number of receptors likely to experience effects with reductions of 5dB(A) and 10dB(A), which are respectively described as 'moderate' and 'good' standards of noise reduction. The revised tables presenting updated assessment outcomes based on the refinement of assumptions are presented in Tables 1.4 – 1.6.

1.4.4 Although the results below are presented separately for urban and rural receptors for consistency with previous revisions, the same significance threshold has been adopted for both groups.

Table 1.4: Potential Noise Effects on Receptors (Without Noise-reducing Measures)

Receptor Group	Period	Magnitude of Change	Potential Significance of Effect	Approximate Number of Receptors Expected to Experience Effect	
				Residential	Other Community Receptors
Urban	Day	Large	Major, significant	23	7
		Medium	Moderate, significant	296	3

Receptor Group	Period	Magnitude of Change	Potential Significance of Effect	Approximate Number of Receptors Expected to Experience Effect	
				Residential	Other Community Receptors
		Small	Minor, not significant	254	56
Urban	Night	Large	Major, significant	0	0
		Medium	Moderate, significant	0	0
		Small	Minor, not significant	0	0
Rural	Day	Large	Major, significant	0	0
		Medium	Moderate, significant	3	1
		Small	Minor, not significant	32	0
Rural	Night	Large	Major, significant	0	0
		Medium	Moderate, significant	0	0
		Small	Minor, not significant	0	0

Table 1.5: Estimated Number of Properties Experiencing Noise Effects During Installation (Assuming Noise-reducing Measures Achieve a 'Moderate' Reduction of 5dB)

Receptor Group	Period	Magnitude of Change	Potential Significance of Effect	Approximate Number of Receptors Expected to Experience Effect	
				Residential	Other Community Receptors
Urban	Day	Large	Major, significant	0	0
		Medium	Moderate, significant	23	7
		Small	Minor, not significant	296	3
Urban	Night	Large	Major, significant	0	0
		Medium	Moderate, significant	0	0
		Small	Minor, not significant	0	0
Rural	Day	Large	Major, significant	0	0
		Medium	Moderate, significant	0	0
		Small	Minor, not significant	3	1
Rural	Night	Large	Major, significant	0	0
		Medium	Moderate, significant	0	0
		Small	Minor, not significant	0	0

Table 1.6: Estimated Number of Properties Experiencing Noise Effects During Installation (Assuming Noise-reducing Measures Achieve a 'Good' Reduction of 10dB)

Receptor Group	Period	Magnitude of Change	Potential Significance of Effect	Approximate Number of Receptors Expected to Experience Effect	
				Residential	Other Community Receptors
Urban	Day	Large	Major, significant	0	0

Receptor Group	Period	Magnitude of Change	Potential Significance of Effect	Approximate Number of Receptors Expected to Experience Effect	
				Residential	Other Community Receptors
		Medium	Moderate, significant	0	0
		Small	Minor, not significant	23	7
Urban	Night	Large	Major, significant	0	0
		Medium	Moderate, significant	0	0
		Small	Minor, not significant	0	0
Rural	Day	Large	Major, significant	0	0
		Medium	Moderate, significant	0	0
		Small	Minor, not significant	0	0
Rural	Night	Large	Major, significant	0	0
		Medium	Moderate, significant	0	0
		Small	Minor, not significant	0	0

1.4.5 A refined summary of the number of properties with the potential to experience significant (i.e. moderate or major) noise and vibration effects during pipeline installation is presented in Table 1.7.

Table 1.7: Summary of Potential Significant Noise and Vibration Effects during Pipeline Installation

Receptor Group	No noise reducing measures		'Moderate' noise reduction of 5dB		'Good' noise reduction of 10dB	
	Residential	Other Community Receptors	Residential	Other Community Receptors	Residential	Other Community Receptors
Urban	319	10	23	7	0	0
Rural	3	1	0	0	0	0

1.4.6 The results of the assessment presented in Tables 1.4 – 1.7 demonstrate that, due to the refinement of the various assumptions that underpin the assessment, there are now a relatively small number of properties that are assessed as having the potential to experience significant short-term effects during installation.

1.4.7 Furthermore, provided that a 'good' degree of noise mitigation is achieved, then no significant adverse effects during installation would be expected.

1.4.8 The addresses of the properties with the potential to experience significant effects without noise-reducing measures are presented in Appendix A. Figure 1 shows the geographical spread of these properties across the project.

1.4.9 Table 1.9 presents a summary of the residential receptor groups where the significant noise effects could be experienced without noise reducing measures.

Table 1.9: Key residential receptor groups

Town / Area	Road	Number of properties	
		Residential	Other Community Receptors
Ashford	Stanwell Road	1	1
Ashford	Woodthorpe Road	112	1
Ashford	The Wickets	1	0
Ashford	Station Road	15	0
Ashford	Knapp Road	0	1
Ashford	Station Approach	3	0
Ashford	Kingston Road	0	1
Chertsey, Lyne	Hanworth Lane	1	0
Lightwater	Blackthorn Drive	2	0
Lightwater	Burdock Close	1	0
Frimley	Berkeley Crescent	6	0
Frimley	Braemar Close	1	0
Frimley	Buckingham Way	2	0
Frimley	Carisbrooke	1	0
Frimley	Danebury Walk	1	0
Frimley	Oldbury Close	2	0
Frimley	Penshurst Rise	6	0
Frimley	Pevensey Way	2	0
Frimley	Sandringham Way	1	0
Frimley	Beaumaris Parade	3	0
Frimley	Balmoral Drive	0	2
Farnborough	Ship Lane	35	0
Farnborough	Ringwood Road	27	1
Farnborough	Cove Road	19	0
Farnborough	Nash Close	34	0
Farnborough	Ship Alley	2	0
Farnborough	Cabrol Road	1	0
Farnborough	Stake Lane	1	0
Addlestone,	Addlestone Moor	1	0
Addlestone	Canford Drive	27	0
Addlestone	Chertsey Road	2	2
Church Crookham	Quetta Park	0	1
Staines	Ashford Road	11	1
Staines	Greenway Drive	1	0



1.4.10 Table 1.10 summarises the 11 community receptors at which significant noise effects could be experienced without noise reducing measures.

Table 1.10: Receptors with potential to experience significant effects outside key receptor groups

Address
Farnborough Gate Sports Pavilion, Ringwood Road, Farnborough, Hampshire, GU14 8BL
Community Centre, Community Centre, Balmoral Drive, Camberley, Surrey, GU16 9AR
Frimley Baptist Church, Frimley Baptist Church, Balmoral Drive, Camberley, Surrey, GU16 9AR
Quetta Park Community Centre, The Community Centre, Quetta Park, Fleet, Hampshire, GU52 8TL
Chertsey High School, The Hub, Chertsey Road, Addlestone, Surrey, KT15 2EP
Equippers Church, The Hub Equippers, The Hub, Chertsey Road, Addlestone, Surrey, KT15 2EP
Clarendon Primary School, Clarendon County Primary School, Knapp Road, Ashford, Surrey, TW15 2HZ
Salvation Army Citadel, Woodthorpe Road, Ashford, Surrey, TW15 3JY
St Hildas Church, Stanwell Road, Ashford, Surrey, TW15 3QL
Fordbridge Park, Kingston Road, Ashford, Surrey, TW15 3S
Fourth Ashford Scout Group, Higham Base, Ashford Road, Surrey TW18 1QF

Assessment of Noise during Pipeline Installation using National Policy Descriptors

1.4.11 The assessment of noise using National Policy Descriptors presented in paragraphs 6.1.11 – 6.1.19 of ES Appendix 13.3 Noise and Vibration Technical Note is not affected by the subsequent changes to the approach and assumptions detailed in Sections 1.2 and 1.3 of this document.

1.4.12 The assessment concluded that there are no receptors that would experience effects above the adopted Significant Observable Adverse Effect Level, defined in ES Appendix 13.3 Noise and Vibration Technical Note. Therefore, the project is not expected to cause significant adverse effects on health and quality of life, and the effects are not considered significant in terms of government policy.

1.5 Good Practice Measures and Additional Mitigation

1.5.1 The project has also made the following commitments which are set out within the Outline Noise and Vibration Management Plan (NVMP) (Appendix E of the Outline Construction Environmental Management Plan). These commitments will help to reduce the effects of noise on receptors:

- Commitment G22: *'Plant and vehicles would conform to relevant applicable standards for the vehicle type, would be correctly maintained and operated in accordance with manufacturer's recommendations and in a responsible manner';*
- Commitment G23: *'All plant and vehicles would be required to switch off their engines when not in use and when it is safe to do so';*
- Commitment G24: *'In the absence of a mains electricity supply, super silent pack generators would be used as an alternative power supply. A generator shall be considered 'super silent' if it meets the following criteria:*



- *has a maximum noise output of 69 dB(A) at 7m;*
- *is fitted with a silencer in the diesel combustion exhaust system; and*
- *includes a layer of barrier material within the casing of the generator to reduce noise breakout.*’;
- *Commitment G25: ‘Any activity carried out or equipment located within a logistics hub or construction compound that may produce a noticeable nuisance from dust, noise, lighting etc would be located away from sensitive receptors such as residential properties or ecological sites where practicable’;*
- *Commitment G104: ‘Before works commence, the site workforce would be fully briefed on the need to keep all noise generated to a low level. Shouting and raised voices would not be permitted other than in cases where warnings of danger must be given. No personal radios on site.’;*
- *Commitment G108: ‘Audible vehicle reversing sirens, would be set to as low a setting as is compatible with safety requirements where possible’;* and
- *Commitment G109: ‘Noise implications would be considered when planning activities such as deliveries of pipe and bulk materials’.*

1.5.2 The key good practice commitment is Commitment G99 which states that *‘The contractor would be required to produce a Noise and Vibration Management Plan for the approval of the relevant planning authority. The Noise and Vibration Management Plan would, having regard to the approved operational hours, set out where applicable, the best practicable means that would be used to reduce noise and vibration during installation.’* An Outline NVMP has been submitted at Deadline 4 (Appendix E of the Outline Construction Environmental Management Plan).

1.5.3 For most activities at construction sites, the use of acoustic barrier matting attached to temporary site fencing is considered to represent a best practice noise reduction technique. In relation to noise barriers BS 5228-1:2009+A1:2014 (BSI, 2014) suggests as a generalisation to *‘assume an approximate attenuation of 5 dB when the top of the plant is just visible to the receiver over the noise barrier, and of 10 dB when the noise screen completely hides the sources from the receiver.’* This indicates that the proposed type of mitigation will be able to provide a ‘good’ degree of mitigation (i.e. 10dB of noise reduction).

1.5.4 Commitment G107 has been amended in the Outline NVMP to reduce the potential for significant effects at the residential receptor groups and now states:

1.5.5 *‘Temporary noise screening would be put in place to screen receptors at the following locations from installation activity, unless a detailed assessment is undertaken which demonstrates that no significant noise impacts would occur without screening. Any additional locations at which screening would be installed would be identified in the Noise and Vibration Management Plan. The screening would comprise acoustic barrier material (such as Echo Barrier™ or similar) fitted to site fencing.*

- *Ashford: Stanwell Road, Woodthorpe Road, The Wickets, Station Road, Knapp Road, Station Approach, Kingston Road;*
- *Lightwater: Blackthorn Drive, Burdock Close;*



- *Frimley: Balmoral Drive, Berkeley Crescent, Braemar Close, Buckingham Way, Carisbrooke, Danebury Walk, Oldbury Close, Peshurst Rise, Pevensey Way, Sandringham Way, Beaumaris Parade;*
- *Farnborough: Ship Lane, Ringwood Road, Cove Road, Nash Close, Ship Alley, Stake Lane, Cabrol Road;*
- *Addlestone: Addlestone Moor, Roakes Avenue, Canford Drive, Chertsey Road; and*
- *Staines: Ashford Road, Greenway Drive;*
- *Quetta Park, Church Crookham.'*

1.5.6 Commercially available acoustic barriers such as Echo Barrier™ comprise a mass layer which attenuates the direct transmission of sound by 10-20 dB. They also typically include an acoustic absorbent layer that prevents the reflection of sound back towards the source. The height of the noise barriers on the project is expected to be 2m and this is expected to completely screen all sources from receivers at a height of 2m or less.

1.5.7 For typical residential houses, the ground floor is considered sensitive during the proposed working hours. The proposed noise barriers would be expected to screen all sources at ground floor windows, and would achieve a 'good' degree of mitigation (i.e. 10dB of noise reduction). This is expected to remove significant effects at all residential houses.

1.5.8 Appendix A includes flats at Woodthorpe Road, Station Approach and Station Road, Ashford and five community buildings, which have windows above the ground floor level and that could have line of sight to the works over the noise barriers. The noise associated with the works in these urban open cut locations would be dominated by the breaking out of the existing paving, the noise from which is generated at ground level. Noise barriers would be located close to these activities due to the small working width required for in-road working locations. These factors mean that the barriers are likely to screen the dominant noise sources from the windows of nearby flats and community receptors, and provide a 'good' degree of mitigation. It is therefore concluded that significant effects could be avoided at all flats and community receptors.

1.5.9 When the locations of the final pipeline route and work fence are known, the screening provided by these barriers will be confirmed in the relevant final Noise and Vibration Management Plan.

1.6 Conclusions

1.6.1 This Addendum updates the assessment provided at DCO Application and contained within ES Appendix 13.3 Noise and Vibration Technical Note. It provides the following:

- an updated assessment of noise during installation based on this evolved and more detailed understanding of the proposed works;
- an update of the assessment based on the revision to the adopted significance threshold;



- detailed information on the location of noise sensitive premises and areas that may experience noise effects during installation; and
 - an updated commitment to provide noise screening at the key locations that could otherwise experience significant noise effects.
- 1.6.2 Drawings showing the final locations of noise barriers would be included in the final NVMP produced prior to installation.
- 1.6.3 The updated assessment concludes that temporary significant noise effects during installation could be avoided at all receptors.
- 1.6.4 Furthermore, the project is not expected to cause significant adverse effects on health and quality of life, and the effects are not considered significant in terms of government policy.



References

British Standards Institution (BSI) (2014a). BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites. Noise. London: BSI.

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Esso (2018). Southampton to London Pipeline Project: 6.4 Environmental Statement - Appendix 16.1 - Code of Construction Practice. May 2019.

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Department for Communities and Local Government (1994) Planning Policy Guidance 24: Planning and Noise. September 1994.

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2 Appendices

Appendix A: Addresses of properties with potential to experience significant effects during installation (assuming no noise reducing measures)

Addresses of properties with potential to experience significant effects during installation (assuming no noise reducing measures)

Receptor Type	Address	Calculated noise level during installation assuming no noise reducing measures (L_{Aeq} , dB)
Dwelling	146 Cove Road, Farnborough, Hampshire, GU14 0HJ	72
Dwelling	148 Cove Road, Farnborough, Hampshire, GU14 0HJ	71
Dwelling	150 Cove Road, Farnborough, Hampshire, GU14 0HJ	71
Dwelling	152 Cove Road, Farnborough, Hampshire, GU14 0HJ	71
Dwelling	154 Cove Road, Farnborough, Hampshire, GU14 0HJ	71
Dwelling	156 Cove Road, Farnborough, Hampshire, GU14 0HJ	71
Dwelling	158 Cove Road, Farnborough, Hampshire, GU14 0HJ	71
Dwelling	160 Cove Road, Farnborough, Hampshire, GU14 0HJ	71
Dwelling	162 Cove Road, Farnborough, Hampshire, GU14 0HJ	71
Dwelling	164 Cove Road, Farnborough, Hampshire, GU14 0HJ	71
Dwelling	166 Cove Road, Farnborough, Hampshire, GU14 0HJ	71
Dwelling	168 Cove Road, Farnborough, Hampshire, GU14 0HJ	72
Dwelling	170 Cove Road, Farnborough, Hampshire, GU14 0HJ	73
Dwelling	1 Nash Close, Farnborough, Hampshire, GU14 0HL	74
Dwelling	3 Nash Close, Farnborough, Hampshire, GU14 0HL	71
Dwelling	4 Nash Close, Farnborough, Hampshire, GU14 0HL	72
Dwelling	5 Nash Close, Farnborough, Hampshire, GU14 0HL	72

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Receptor Type	Address	Calculated noise level during installation assuming no noise reducing measures (L_{Aeq} , dB)
Dwelling	6 Nash Close, Farnborough, Hampshire, GU14 0HL	72
Dwelling	7 Nash Close, Farnborough, Hampshire, GU14 0HL	72
Dwelling	8 Nash Close, Farnborough, Hampshire, GU14 0HL	72
Dwelling	9 Nash Close, Farnborough, Hampshire, GU14 0HL	71
Dwelling	10 Nash Close, Farnborough, Hampshire, GU14 0HL	72
Dwelling	11 Nash Close, Farnborough, Hampshire, GU14 0HL	72
Dwelling	12 Nash Close, Farnborough, Hampshire, GU14 0HL	72
Dwelling	13 Nash Close, Farnborough, Hampshire, GU14 0HL	73
Dwelling	14 Nash Close, Farnborough, Hampshire, GU14 0HL	73
Dwelling	15 Nash Close, Farnborough, Hampshire, GU14 0HL	76
Dwelling	16 Nash Close, Farnborough, Hampshire, GU14 0HL	78
Dwelling	17 Nash Close, Farnborough, Hampshire, GU14 0HL	76
Dwelling	18 Nash Close, Farnborough, Hampshire, GU14 0HL	76
Dwelling	19 Nash Close, Farnborough, Hampshire, GU14 0HL	75
Dwelling	20 Nash Close, Farnborough, Hampshire, GU14 0HL	74
Dwelling	21 Nash Close, Farnborough, Hampshire, GU14 0HL	73
Dwelling	22 Nash Close, Farnborough, Hampshire, GU14 0HL	73
Dwelling	23 Nash Close, Farnborough, Hampshire, GU14 0HL	73
Dwelling	24 Nash Close, Farnborough, Hampshire, GU14 0HL	71
Dwelling	25 Nash Close, Farnborough, Hampshire, GU14 0HL	72
Dwelling	26 Nash Close, Farnborough, Hampshire, GU14 0HL	73
Dwelling	27 Nash Close, Farnborough, Hampshire, GU14 0HL	73
Dwelling	28 Nash Close, Farnborough, Hampshire, GU14 0HL	74

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Receptor Type	Address	Calculated noise level during installation assuming no noise reducing measures (L_{Aeq} , dB)
Dwelling	29 Nash Close, Farnborough, Hampshire, GU14 0HL	73
Dwelling	30 Nash Close, Farnborough, Hampshire, GU14 0HL	73
Dwelling	31 Nash Close, Farnborough, Hampshire, GU14 0HL	73
Dwelling	32 Nash Close, Farnborough, Hampshire, GU14 0HL	73
Dwelling	33 Nash Close, Farnborough, Hampshire, GU14 0HL	72
Dwelling	34 Nash Close, Farnborough, Hampshire, GU14 0HL	73
Dwelling	36 Nash Close, Farnborough, Hampshire, GU14 0HL	73
Dwelling	135 Cove Road, Farnborough, Hampshire, GU14 0HQ	70
Dwelling	137 Cove Road, Farnborough, Hampshire, GU14 0HQ	71
Dwelling	139 Cove Road, Farnborough, Hampshire, GU14 0HQ	71
Dwelling	141 Cove Road, Farnborough, Hampshire, GU14 0HQ	70
Dwelling	143 Cove Road, Farnborough, Hampshire, GU14 0HQ	71
Dwelling	145 Cove Road, Farnborough, Hampshire, GU14 0HQ	70
Dwelling	153 Ship Lane, Farnborough, Hampshire, GU14 8BE	71
Dwelling	155 Ship Lane, Farnborough, Hampshire, GU14 8BE	72
Dwelling	156 Ship Lane, Farnborough, Hampshire, GU14 8BE	72
Dwelling	158 Ship Lane, Farnborough, Hampshire, GU14 8BE	72
Dwelling	160 Ship Lane, Farnborough, Hampshire, GU14 8BE	75
Dwelling	Living Accommodation, The Ship Inn, Ship Lane, Farnborough, Hampshire, GU14 8BE	74
Dwelling	1 Ringwood Road, Farnborough, Hampshire, GU14 8BG	72
Dwelling	2 Ringwood Road, Farnborough, Hampshire, GU14 8BG	73
Dwelling	3 Ringwood Road, Farnborough, Hampshire, GU14 8BG	72
Dwelling	4 Ringwood Road, Farnborough, Hampshire, GU14 8BG	73

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Receptor Type	Address	Calculated noise level during installation assuming no noise reducing measures (L_{Aeq} , dB)
Dwelling	5 Ringwood Road, Farnborough, Hampshire, GU14 8BG	72
Dwelling	6 Ringwood Road, Farnborough, Hampshire, GU14 8BG	73
Dwelling	7 Ringwood Road, Farnborough, Hampshire, GU14 8BG	72
Dwelling	8 Ringwood Road, Farnborough, Hampshire, GU14 8BG	73
Dwelling	9 Ringwood Road, Farnborough, Hampshire, GU14 8BG	72
Dwelling	10 Ringwood Road, Farnborough, Hampshire, GU14 8BG	73
Dwelling	11 Ringwood Road, Farnborough, Hampshire, GU14 8BG	72
Dwelling	12 Ringwood Road, Farnborough, Hampshire, GU14 8BG	73
Dwelling	13 Ringwood Road, Farnborough, Hampshire, GU14 8BG	72
Dwelling	14 Ringwood Road, Farnborough, Hampshire, GU14 8BG	73
Dwelling	15 Ringwood Road, Farnborough, Hampshire, GU14 8BG	72
Dwelling	16 Ringwood Road, Farnborough, Hampshire, GU14 8BG	73
Dwelling	17 Ringwood Road, Farnborough, Hampshire, GU14 8BG	72
Dwelling	18 Ringwood Road, Farnborough, Hampshire, GU14 8BG	73
Dwelling	19 Ringwood Road, Farnborough, Hampshire, GU14 8BG	72
Dwelling	20 Ringwood Road, Farnborough, Hampshire, GU14 8BG	73
Dwelling	21 Ringwood Road, Farnborough, Hampshire, GU14 8BG	72
Dwelling	22 Ringwood Road, Farnborough, Hampshire, GU14 8BG	73
Dwelling	23 Ringwood Road, Farnborough, Hampshire, GU14 8BG	72
Dwelling	24 Ringwood Road, Farnborough, Hampshire, GU14 8BG	73
Dwelling	25 Ringwood Road, Farnborough, Hampshire, GU14 8BG	72
Dwelling	27 Ringwood Road, Farnborough, Hampshire, GU14 8BG	72
Dwelling	29 Ringwood Road, Farnborough, Hampshire, GU14 8BG	72

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Receptor Type	Address	Calculated noise level during installation assuming no noise reducing measures (L_{Aeq} , dB)
Dwelling	110 Ship Lane, Farnborough, Hampshire, GU14 8BH	70
Dwelling	112 Ship Lane, Farnborough, Hampshire, GU14 8BH	71
Dwelling	114 Ship Lane, Farnborough, Hampshire, GU14 8BH	71
Dwelling	116 Ship Lane, Farnborough, Hampshire, GU14 8BH	71
Dwelling	118 Ship Lane, Farnborough, Hampshire, GU14 8BH	71
Dwelling	135 Ship Lane, Farnborough, Hampshire, GU14 8BH	72
Dwelling	137 Ship Lane, Farnborough, Hampshire, GU14 8BH	72
Dwelling	120 Ship Lane, Farnborough, Hampshire, GU14 8BJ	71
Dwelling	122 Ship Lane, Farnborough, Hampshire, GU14 8BJ	71
Dwelling	124 Ship Lane, Farnborough, Hampshire, GU14 8BJ	71
Dwelling	126 Ship Lane, Farnborough, Hampshire, GU14 8BJ	71
Dwelling	128 Ship Lane, Farnborough, Hampshire, GU14 8BJ	71
Dwelling	130 Ship Lane, Farnborough, Hampshire, GU14 8BJ	71
Dwelling	131 Ship Lane, Farnborough, Hampshire, GU14 8BJ	72
Dwelling	133 Ship Lane, Farnborough, Hampshire, GU14 8BJ	72
Dwelling	134 Ship Lane, Farnborough, Hampshire, GU14 8BJ	70
Dwelling	136 Ship Lane, Farnborough, Hampshire, GU14 8BJ	71
Dwelling	138 Ship Lane, Farnborough, Hampshire, GU14 8BJ	71
Dwelling	140 Ship Lane, Farnborough, Hampshire, GU14 8BJ	71
Dwelling	142 Ship Lane, Farnborough, Hampshire, GU14 8BJ	71
Dwelling	144 Ship Lane, Farnborough, Hampshire, GU14 8BJ	71
Dwelling	145 Ship Lane, Farnborough, Hampshire, GU14 8BJ	70
Dwelling	146 Ship Lane, Farnborough, Hampshire, GU14 8BJ	71

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Receptor Type	Address	Calculated noise level during installation assuming no noise reducing measures (L_{Aeq} , dB)
Dwelling	147 Ship Lane, Farnborough, Hampshire, GU14 8BJ	71
Dwelling	148 Ship Lane, Farnborough, Hampshire, GU14 8BJ	71
Dwelling	149 Ship Lane, Farnborough, Hampshire, GU14 8BJ	70
Dwelling	150 Ship Lane, Farnborough, Hampshire, GU14 8BJ	71
Dwelling	151 Ship Lane, Farnborough, Hampshire, GU14 8BJ	71
Dwelling	152 Ship Lane, Farnborough, Hampshire, GU14 8BJ	72
Community	Bowling Club, Farnborough Gate Sports Pavilion, Ringwood Road, Farnborough, Hampshire, GU14 8BL	65
Dwelling	1 Hartwell Villas, Ship Alley, Farnborough, Hampshire, GU14 8BQ	72
Dwelling	2 Hartwell Villas, Ship Alley, Farnborough, Hampshire, GU14 8BQ	71
Dwelling	1 Stake Lane, Farnborough, Hampshire, GU14 8BP	75
Dwelling	20 Cabrol Road, Farnborough, Hampshire, GU14 8NY	75
Dwelling	2 Braemar Close, Camberley, Surrey, GU16 8UP	72
Dwelling	1A Beaumaris Parade, Camberley, Surrey, GU16 8UR	72
Dwelling	2A Beaumaris Parade, Camberley, Surrey, GU16 8UR	72
Dwelling	3A Beaumaris Parade, Camberley, Surrey, GU16 8UR	72
Dwelling	73 Buckingham Way, Camberley, Surrey, GU16 8XP	70
Dwelling	86 Buckingham Way, Camberley, Surrey, GU16 8XP	70
Dwelling	14 Carisbrooke, Camberley, Surrey, GU16 8XR	75
Dwelling	13 Oldbury Close, Camberley, Surrey, GU16 8XT	72
Dwelling	16 Oldbury Close, Camberley, Surrey, GU16 8XT	70
Dwelling	31 Danebury Walk, Camberley, Surrey, GU16 8XU	72
Dwelling	1 Penshurst Rise, Camberley, Surrey, GU16 8XX	73
Dwelling	2 Penshurst Rise, Camberley, Surrey, GU16 8XX	72

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Receptor Type	Address	Calculated noise level during installation assuming no noise reducing measures (L_{Aeq} , dB)
Dwelling	5 Penshurst Rise, Camberley, Surrey, GU16 8XX	73
Dwelling	6 Penshurst Rise, Camberley, Surrey, GU16 8XX	71
Dwelling	7 Penshurst Rise, Camberley, Surrey, GU16 8XX	72
Dwelling	47 Penshurst Rise, Camberley, Surrey, GU16 8XX	71
Dwelling	24 Berkeley Crescent, Camberley, Surrey, GU16 8YN	70
Dwelling	26 Berkeley Crescent, Camberley, Surrey, GU16 8YN	71
Dwelling	28 Berkeley Crescent, Camberley, Surrey, GU16 8YN	70
Dwelling	30 Berkeley Crescent, Camberley, Surrey, GU16 8YN	71
Dwelling	32 Berkeley Crescent, Camberley, Surrey, GU16 8YN	70
Dwelling	34 Berkeley Crescent, Camberley, Surrey, GU16 8YN	74
Community	Community Centre, Community Centre, Balmoral Drive, Camberley, Surrey, GU16 9AR	68
Religious	Frimley Baptist Church, Frimley Baptist Church, Balmoral Drive, Camberley, Surrey, GU16 9AR	71
Dwelling	8 Sandringham Way, Camberley, Surrey, GU16 9XY	72
Dwelling	1 Pevensey Way, Camberley, Surrey, GU16 9YJ	73
Dwelling	2 Pevensey Way, Camberley, Surrey, GU16 9YJ	74
Dwelling	22 Burdock Close, Lightwater, Surrey, GU18 5YP	70
Dwelling	15 Blackthorn Drive, Lightwater, Surrey, GU18 5YW	71
Dwelling	6 Blackthorn Drive, Lightwater, Surrey, GU18 5YW	71
Community	Quetta Park Community Centre, The Community Centre, Quetta Park, Fleet, Hampshire, GU52 8TL	69
Dwelling	171 Chertsey Road, Addlestone, Surrey, KT15 2EL	72
Dwelling	193 Chertsey Road, Addlestone, Surrey, KT15 2EN	76
Education	Chertsey High School, The Hub, Chertsey Road, Addlestone, Surrey, KT15 2EP	75
Religious	Equippers Church, The Hub Equippers, The Hub, Chertsey Road, Addlestone, Surrey, KT15 2EP	75

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Receptor Type	Address	Calculated noise level during installation assuming no noise reducing measures (L_{Aeq} , dB)
Dwelling	1 Canford Drive, Addlestone, Surrey, KT15 2HH	72
Dwelling	2 Canford Drive, Addlestone, Surrey, KT15 2HL	72
Dwelling	3 Canford Drive, Addlestone, Surrey, KT15 2HH	72
Dwelling	4 Canford Drive, Addlestone, Surrey, KT15 2HL	72
Dwelling	5 Canford Drive, Addlestone, Surrey, KT15 2HH	72
Dwelling	6 Canford Drive, Addlestone, Surrey, KT15 2HL	71
Dwelling	7 Canford Drive, Addlestone, Surrey, KT15 2HH	72
Dwelling	8 Canford Drive, Addlestone, Surrey, KT15 2HL	71
Dwelling	9 Canford Drive, Addlestone, Surrey, KT15 2HH	71
Dwelling	11 Canford Drive, Addlestone, Surrey, KT15 2HH	72
Dwelling	13 Canford Drive, Addlestone, Surrey, KT15 2HH	71
Dwelling	15 Canford Drive, Addlestone, Surrey, KT15 2HH	71
Dwelling	17 Canford Drive, Addlestone, Surrey, KT15 2HH	71
Dwelling	19 Canford Drive, Addlestone, Surrey, KT15 2HH	71
Dwelling	21 Canford Drive, Addlestone, Surrey, KT15 2HH	72
Dwelling	23 Canford Drive, Addlestone, Surrey, KT15 2HH	72
Dwelling	10 Canford Drive, Addlestone, Surrey, KT15 2HL	70
Dwelling	34 Canford Drive, Addlestone, Surrey, KT15 2HL	71
Dwelling	36 Canford Drive, Addlestone, Surrey, KT15 2HL	71
Dwelling	38 Canford Drive, Addlestone, Surrey, KT15 2HL	71
Dwelling	40 Canford Drive, Addlestone, Surrey, KT15 2HL	71
Dwelling	44 Canford Drive, Addlestone, Surrey, KT15 2HL	77
Dwelling	46 Canford Drive, Addlestone, Surrey, KT15 2HL	74

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Receptor Type	Address	Calculated noise level during installation assuming no noise reducing measures (L_{Aeq} , dB)
Dwelling	48 Canford Drive, Addlestone, Surrey, KT15 2HL	73
Dwelling	50 Canford Drive, Addlestone, Surrey, KT15 2HL	77
Dwelling	52 Canford Drive, Addlestone, Surrey, KT15 2HL	76
Dwelling	54 Canford Drive, Addlestone, Surrey, KT15 2HL	74
Dwelling	19 Addlestone Moor, Addlestone, Surrey, KT15 2QJ	76
Dwelling	Pannells Farm, Hanworth Lane, Chertsey, Surrey, KT16 9JX	70
Education	Clarendon Primary School, Clarendon County Primary School, Knapp Road, Ashford, Surrey, TW15 2HZ	71
Dwelling	1 Elizabeth House Elizabeth House, Woodthorpe Road, Ashford, Surrey, TW15 2RH	73
Dwelling	2 Elizabeth House Elizabeth House, Woodthorpe Road, Ashford, Surrey, TW15 2RH	73
Dwelling	3 Elizabeth House Elizabeth House, Woodthorpe Road, Ashford, Surrey, TW15 2RH	73
Dwelling	4 Elizabeth House Elizabeth House, Woodthorpe Road, Ashford, Surrey, TW15 2RH	73
Dwelling	5 Elizabeth House Elizabeth House, Woodthorpe Road, Ashford, Surrey, TW15 2RH	73
Dwelling	6 Elizabeth House Elizabeth House, Woodthorpe Road, Ashford, Surrey, TW15 2RH	73
Dwelling	15A Woodthorpe Road, Ashford, Surrey, TW15 2RP	74
Dwelling	15B Woodthorpe Road, Ashford, Surrey, TW15 2RP	71
Dwelling	Flat, 17 Woodthorpe Road, Ashford, Surrey, TW15 2RP	73
Dwelling	19A Woodthorpe Road, Ashford, Surrey, TW15 2RP	73
Dwelling	23A Woodthorpe Road, Ashford, Surrey, TW15 2RP	73
Dwelling	25A Woodthorpe Road, Ashford, Surrey, TW15 2RP	73
Dwelling	27A Woodthorpe Road, Ashford, Surrey, TW15 2RP	73
Dwelling	31 Woodthorpe Road, Ashford, Surrey, TW15 2RP	73
Dwelling	32A Woodthorpe Road, Ashford, Surrey, TW15 2RU	73
Dwelling	32B Woodthorpe Road, Ashford, Surrey, TW15 2RU	73

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Receptor Type	Address	Calculated noise level during installation assuming no noise reducing measures (L_{Aeq} , dB)
Dwelling	Flat 3, 32 Woodthorpe Road, Ashford, Surrey, TW15 2RU	73
Dwelling	Flat 4, 32 Woodthorpe Road, Ashford, Surrey, TW15 2RU	73
Dwelling	34 Woodthorpe Road, Ashford, Surrey, TW15 2RU	72
Dwelling	36 Woodthorpe Road, Ashford, Surrey, TW15 2RU	72
Dwelling	38 Woodthorpe Road, Ashford, Surrey, TW15 2RU	73
Dwelling	39 Woodthorpe Road, Ashford, Surrey, TW15 2RP	72
Dwelling	40 Woodthorpe Road, Ashford, Surrey, TW15 2RU	73
Dwelling	42 Woodthorpe Road, Ashford, Surrey, TW15 2RU	73
Dwelling	45 Woodthorpe Road, Ashford, Surrey, TW15 2RP	71
Dwelling	45A Woodthorpe Road, Ashford, Surrey, TW15 2RP	71
Dwelling	45B Woodthorpe Road, Ashford, Surrey, TW15 2RP	71
Dwelling	45C Woodthorpe Road, Ashford, Surrey, TW15 2RP	71
Dwelling	46A Woodthorpe Road, Ashford, Surrey, TW15 2RU	70
Dwelling	Flat 1, 49 Woodthorpe Road, Ashford, Surrey, TW15 2RP	71
Dwelling	Flat 2, 49 Woodthorpe Road, Ashford, Surrey, TW15 2RP	71
Dwelling	Flat 3, 49 Woodthorpe Road, Ashford, Surrey, TW15 2RP	71
Dwelling	Flat 4, 49 Woodthorpe Road, Ashford, Surrey, TW15 2RP	71
Dwelling	51 Woodthorpe Road, Ashford, Surrey, TW15 2RP	73
Dwelling	52 Woodthorpe Road, Ashford, Surrey, TW15 2RU	72
Dwelling	53 Woodthorpe Road, Ashford, Surrey, TW15 2RP	70
Dwelling	53A Woodthorpe Road, Ashford, Surrey, TW15 2RP	70
Dwelling	53B Woodthorpe Road, Ashford, Surrey, TW15 2RP	71
Dwelling	53C Woodthorpe Road, Ashford, Surrey, TW15 2RP	71

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Receptor Type	Address	Calculated noise level during installation assuming no noise reducing measures (L_{Aeq} , dB)
Dwelling	54 Woodthorpe Road, Ashford, Surrey, TW15 2RU	72
Dwelling	58 Woodthorpe Road, Ashford, Surrey, TW15 2RU	72
Dwelling	59 Woodthorpe Road, Ashford, Surrey, TW15 3JT	71
Dwelling	60 Woodthorpe Road, Ashford, Surrey, TW15 2RU	72
Dwelling	60A Woodthorpe Road, Ashford, Surrey, TW15 2RU	72
Dwelling	61 Woodthorpe Road, Ashford, Surrey, TW15 3JT	71
Dwelling	62 Woodthorpe Road, Ashford, Surrey, TW15 2RU	72
Dwelling	63 Woodthorpe Road, Ashford, Surrey, TW15 3JT	71
Dwelling	64 Woodthorpe Road, Ashford, Surrey, TW15 2RU	72
Dwelling	65 Woodthorpe Road, Ashford, Surrey, TW15 3JT	71
Dwelling	65A Woodthorpe Road, Ashford, Surrey, TW15 3JT	71
Dwelling	66 Woodthorpe Road, Ashford, Surrey, TW15 2RU	72
Dwelling	67 Woodthorpe Road, Ashford, Surrey, TW15 3JT	71
Dwelling	67A Woodthorpe Road, Ashford, Surrey, TW15 3JT	72
Dwelling	68 Woodthorpe Road, Ashford, Surrey, TW15 2RU	71
Dwelling	68A Woodthorpe Road, Ashford, Surrey, TW15 2RU	71
Dwelling	69 Woodthorpe Road, Ashford, Surrey, TW15 3JT	71
Dwelling	70 Woodthorpe Road, Ashford, Surrey, TW15 2RU	71
Dwelling	70A Woodthorpe Road, Ashford, Surrey, TW15 2RU	71
Dwelling	Lower Flat, 71 Woodthorpe Road, Ashford, Surrey, TW15 3JT	71
Dwelling	Top Flat, 71 Woodthorpe Road, Ashford, Surrey, TW15 3JT	71
Dwelling	72 Woodthorpe Road, Ashford, Surrey, TW15 2RU	71
Dwelling	73 Woodthorpe Road, Ashford, Surrey, TW15 3JT	71

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Receptor Type	Address	Calculated noise level during installation assuming no noise reducing measures (L_{Aeq} , dB)
Dwelling	74A Woodthorpe Road, Ashford, Surrey, TW15 2RU	71
Dwelling	74B Woodthorpe Road, Ashford, Surrey, TW15 2RU	74
Dwelling	75 Woodthorpe Road, Ashford, Surrey, TW15 3JT	71
Dwelling	75A Woodthorpe Road, Ashford, Surrey, TW15 3JT	72
Dwelling	76 Woodthorpe Road, Ashford, Surrey, TW15 2RU	70
Dwelling	76A Woodthorpe Road, Ashford, Surrey, TW15 2RU	70
Dwelling	79 Woodthorpe Road, Ashford, Surrey, TW15 3JT	71
Dwelling	Top Floor Flat, 81 Woodthorpe Road, Ashford, Surrey, TW15 3JT	71
Dwelling	Ground Floor Flat, 81 Woodthorpe Road, Ashford, Surrey, TW15 3JT	71
Dwelling	82 Woodthorpe Road, Ashford, Surrey, TW15 3JY	70
Dwelling	83 Woodthorpe Road, Ashford, Surrey, TW15 3JT	72
Dwelling	83A Woodthorpe Road, Ashford, Surrey, TW15 3JT	71
Dwelling	84 Woodthorpe Road, Ashford, Surrey, TW15 3JY	71
Dwelling	85 Woodthorpe Road, Ashford, Surrey, TW15 3JT	71
Dwelling	86 Woodthorpe Road, Ashford, Surrey, TW15 3JY	71
Dwelling	87 Woodthorpe Road, Ashford, Surrey, TW15 3JT	71
Dwelling	88 Woodthorpe Road, Ashford, Surrey, TW15 3JY	70
Dwelling	89 Woodthorpe Road, Ashford, Surrey, TW15 3JT	71
Dwelling	90 Woodthorpe Road, Ashford, Surrey, TW15 3JY	71
Dwelling	91 Woodthorpe Road, Ashford, Surrey, TW15 3JT	71
Dwelling	92 Woodthorpe Road, Ashford, Surrey, TW15 3JY	70
Dwelling	93 Woodthorpe Road, Ashford, Surrey, TW15 3JT	70
Dwelling	94 Woodthorpe Road, Ashford, Surrey, TW15 3JY	72

**Southampton to London Pipeline Project
Technical Note: Refinement of the Noise
Assessment**



Receptor Type	Address	Calculated noise level during installation assuming no noise reducing measures (L_{Aeq} , dB)
Dwelling	95 Woodthorpe Road, Ashford, Surrey, TW15 3JT	71
Dwelling	96 Woodthorpe Road, Ashford, Surrey, TW15 3JY	72
Dwelling	97 Woodthorpe Road, Ashford, Surrey, TW15 3JT	71
Dwelling	98 Woodthorpe Road, Ashford, Surrey, TW15 3JY	72
Dwelling	100 Woodthorpe Road, Ashford, Surrey, TW15 3JY	72
Dwelling	102 Woodthorpe Road, Ashford, Surrey, TW15 3JY	71
Dwelling	103 Woodthorpe Road, Ashford, Surrey, TW15 3JX	73
Dwelling	105 Woodthorpe Road, Ashford, Surrey, TW15 3JX	73
Dwelling	106 Woodthorpe Road, Ashford, Surrey, TW15 3JY	71
Dwelling	107 Woodthorpe Road, Ashford, Surrey, TW15 3JX	73
Dwelling	109 Woodthorpe Road, Ashford, Surrey, TW15 3JX	73
Dwelling	11A Station Approach, Ashford, Surrey, TW15 2QN	74
Dwelling	13A Station Approach, Ashford, Surrey, TW15 2QN	74
Dwelling	15A Station Approach, Ashford, Surrey, TW15 2QN	74
Dwelling	White Lodge White Lodge, Station Road, Ashford, Surrey, TW15 2UR	77
Dwelling	7A Station Road, Ashford, Surrey, TW15 2UW	71
Dwelling	9A Station Road, Ashford, Surrey, TW15 2UW	70
Dwelling	9B Station Road, Ashford, Surrey, TW15 2UW	70
Dwelling	Flat 1, Ash House, Station Road, Ashford, Surrey, TW15 2UW	78
Dwelling	Flat 2, Ash House, Station Road, Ashford, Surrey, TW15 2UW	78
Dwelling	Flat 3, Ash House, Station Road, Ashford, Surrey, TW15 2UW	78
Dwelling	Flat 4, Ash House, Station Road, Ashford, Surrey, TW15 2UW	78
Dwelling	Flat 5, Ash House, Station Road, Ashford, Surrey, TW15 2UW	78

**Southampton to London Pipeline Project
Technical Note: Refinement of the Noise
Assessment**



Receptor Type	Address	Calculated noise level during installation assuming no noise reducing measures (L_{Aeq} , dB)
Dwelling	Flat 6, Ash House, Station Road, Ashford, Surrey, TW15 2UW	78
Dwelling	Flat 7, Ash House, Station Road, Ashford, Surrey, TW15 2UW	78
Dwelling	Flat 8, Ash House, Station Road, Ashford, Surrey, TW15 2UW	78
Dwelling	Flat 9, Ash House, Station Road, Ashford, Surrey, TW15 2UW	78
Dwelling	Flat 10, Ash House, Station Road, Ashford, Surrey, TW15 2UW	78
Dwelling	Flat 11, Ash House, Station Road, Ashford, Surrey, TW15 2UW	78
Dwelling	5 The Wickets, Ashford, Surrey, TW15 2RR	73
Dwelling	5A Station Parade, Woodthorpe Road, Ashford, Surrey, TW15 2RX	71
Dwelling	5B Station Parade, Woodthorpe Road, Ashford, Surrey, TW15 2RX	71
Dwelling	6A Station Parade, Woodthorpe Road, Ashford, Surrey, TW15 2RX	73
Dwelling	7A Station Parade, Woodthorpe Road, Ashford, Surrey, TW15 2RX	73
Dwelling	1 Frederick House, Woodthorpe Road, Ashford, Surrey, TW15 2SA	71
Dwelling	2 Frederick House, Woodthorpe Road, Ashford, Surrey, TW15 2SA	71
Dwelling	3 Frederick House, Woodthorpe Road, Ashford, Surrey, TW15 2SA	71
Dwelling	4 Frederick House, Woodthorpe Road, Ashford, Surrey, TW15 2SA	71
Dwelling	5 Frederick House, Woodthorpe Road, Ashford, Surrey, TW15 2SA	71
Dwelling	6 Frederick House, Woodthorpe Road, Ashford, Surrey, TW15 2SA	71
Dwelling	7 Frederick House, Woodthorpe Road, Ashford, Surrey, TW15 2SA	71
Dwelling	8 Frederick House, Woodthorpe Road, Ashford, Surrey, TW15 2SA	71
Dwelling	9 Frederick House, Woodthorpe Road, Ashford, Surrey, TW15 2SA	71
Dwelling	10 Frederick House, Woodthorpe Road, Ashford, Surrey, TW15 2SA	71
Dwelling	1 Gwendoline Court, Woodthorpe Road, Ashford, Surrey, TW15 3JS	72
Dwelling	4 Gwendoline Court, Woodthorpe Road, Ashford, Surrey, TW15 3JS	72

**Southampton to London Pipeline Project
Technical Note: Refinement of the Noise
Assessment**

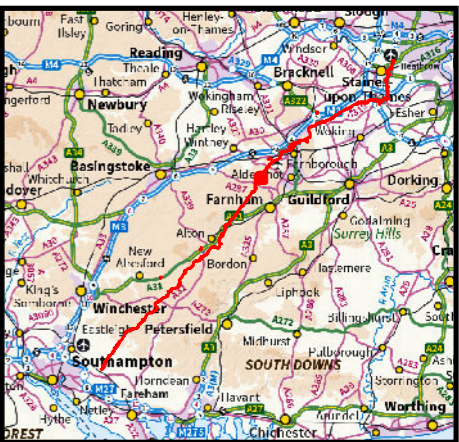
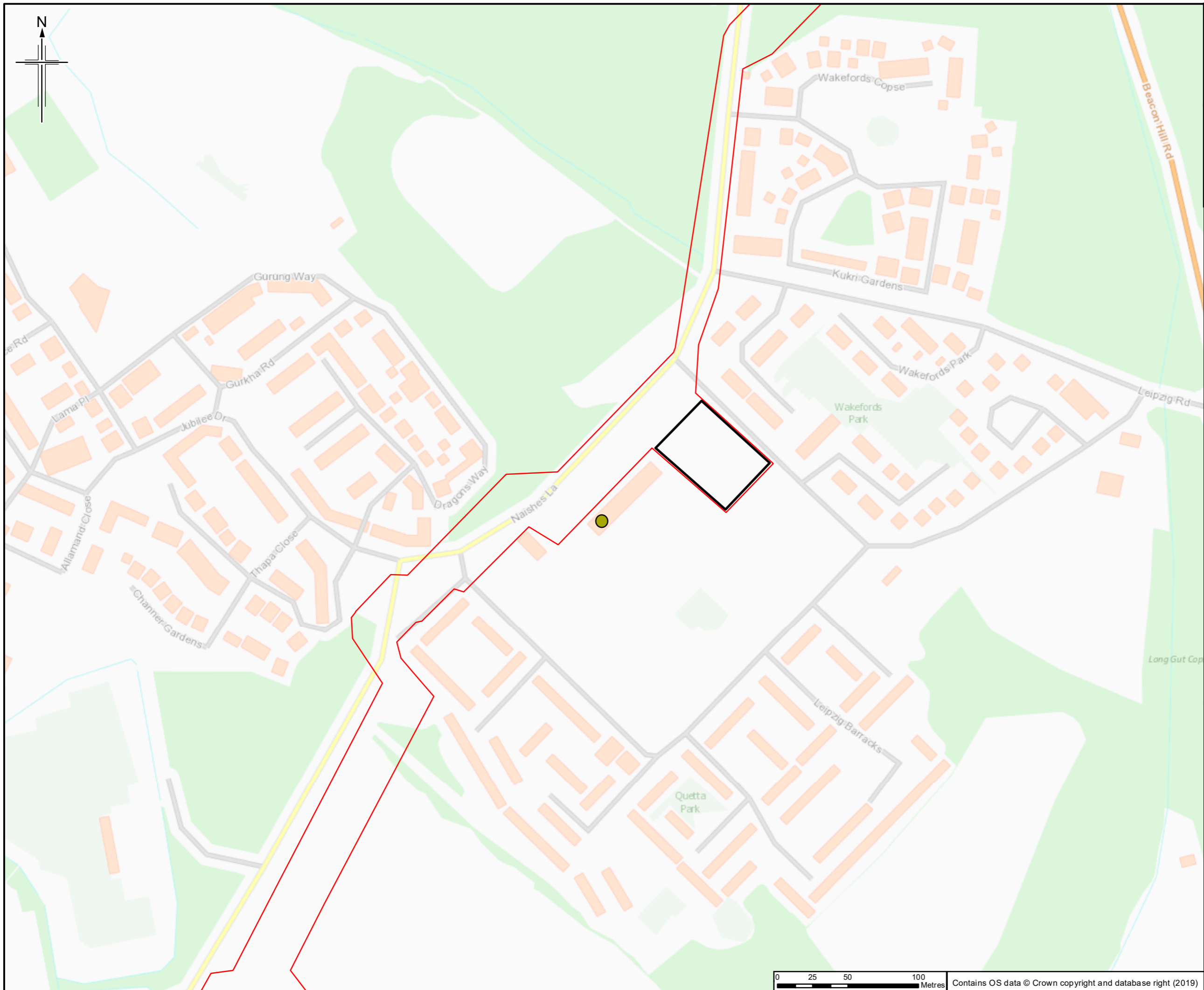


Receptor Type	Address	Calculated noise level during installation assuming no noise reducing measures (L_{Aeq} , dB)
Religious	Salvation Army Citadel, Woodthorpe Road, Ashford, Surrey, TW15 3JY	71
Dwelling	100 Stanwell Road, Ashford, Surrey, TW15 3QH	70
Religious	St Hildas Church, Stanwell Road, Ashford, Surrey, TW15 3QL	72
Community	Shelter, Fordbridge Park, Kingston Road, Ashford, Surrey, TW15 3SJ	72
Community	Fourth Ashford Scout Group, Higham Base, Ashford Road, Laleham, Surrey, TW18 1QF	67
Dwelling	102 Ashford Road, Laleham, Surrey, TW18 1RU	73
Dwelling	107 Ashford Road, Laleham, Surrey, TW18 1RS	70
Dwelling	109 Ashford Road, Laleham, Surrey, TW18 1RS	71
Dwelling	111 Ashford Road, Laleham, Surrey, TW18 1RS	70
Dwelling	117 Ashford Road, Laleham, Surrey, TW18 1RS	70
Dwelling	119 Ashford Road, Laleham, Surrey, TW18 1RS	70
Dwelling	151 Ashford Road, Laleham, Surrey, TW18 1RS	70
Dwelling	165 Ashford Road, Laleham, Surrey, TW18 1RS	71
Dwelling	173 Ashford Road, Laleham, Surrey, TW18 1RS	70
Dwelling	181 Ashford Road, Laleham, Surrey, TW18 1RS	70
Dwelling	183 Ashford Road, Laleham, Surrey, TW18 1RS	70
Dwelling	Baytrees Baytrees, Greenway Drive, Laleham, Surrey, TW18 1RT	71



3 Figures

Figure 1: Properties with potential to experience significant noise effects during installation (assuming no reducing measures)



- Legend**
- Order Limits
 - Construction compounds
- Receptor Type**
- Community

Sheet 1 of 11: This is shown on Sheets 30, 101 and 102 in the Works Plan in Volume 2 Application Document 2.2 (Additional Submission AS-009)

Rev.	Rev. Date	Purpose of revision	Orig/Dwn	Checked	Rev'd	Apprv'd
0	28/01/2020	For Issue			JK	HRP

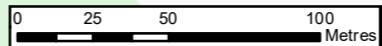
Author: **JACOBS**
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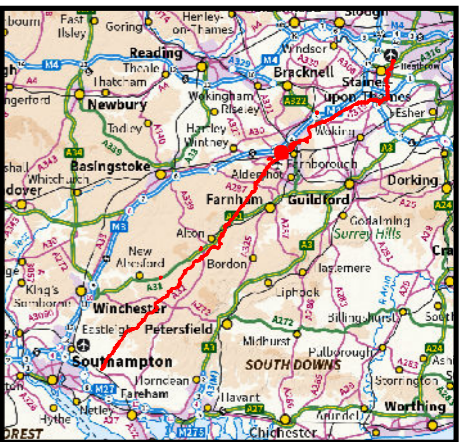
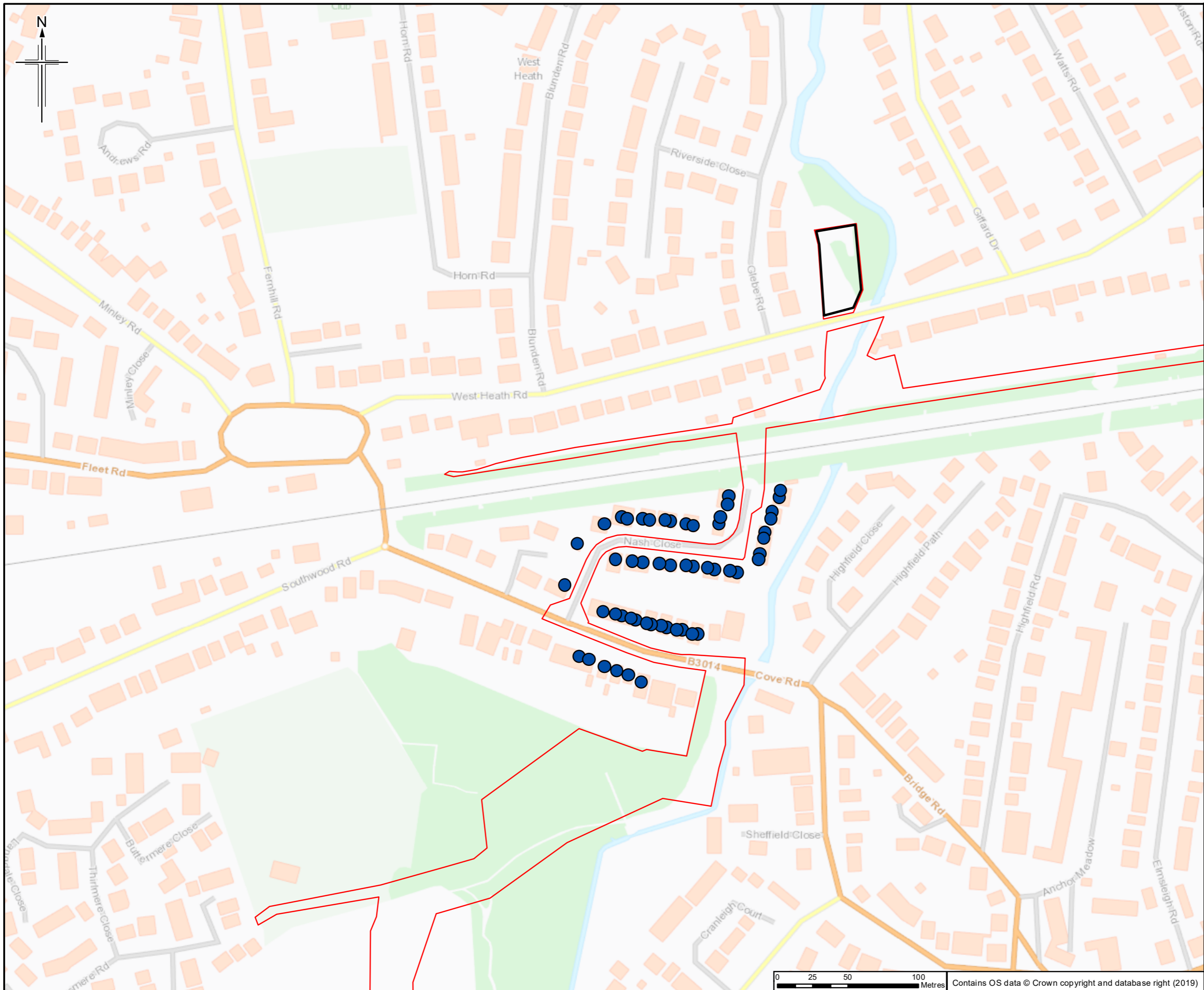
Drawing title:
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- Legend**
- Order Limits
 - Construction compounds
- Receptor Type**
- Residential

Sheet 2 of 11: This is shown on Sheets 34, 104 and 105 in the Works Plan in Volume 2 Application Document 2.2 (Additional Submission AS-009)

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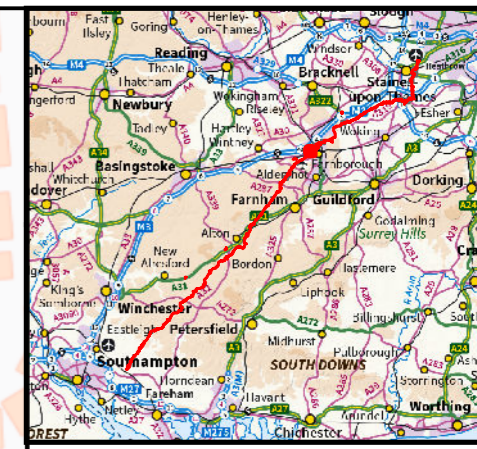
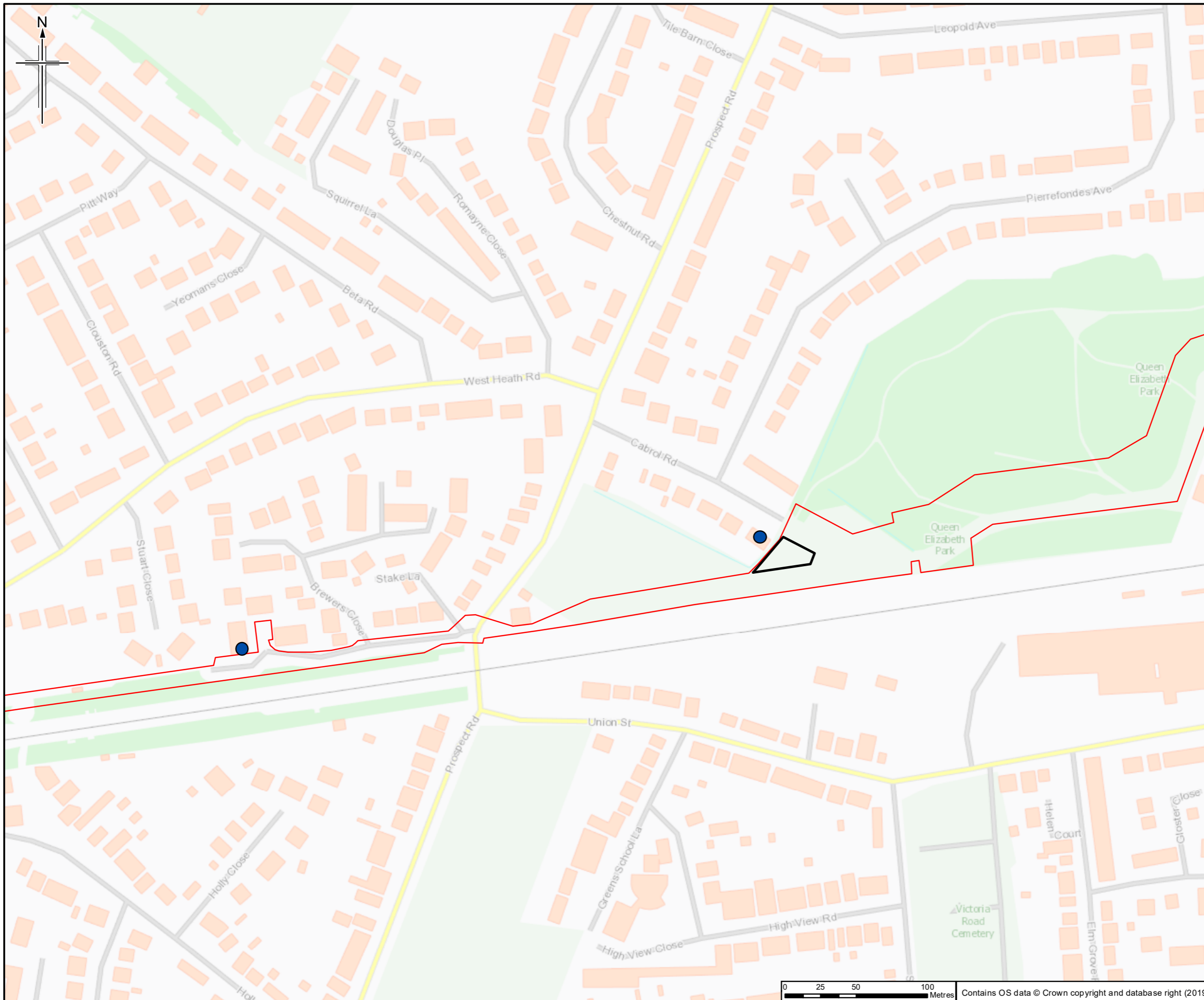
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Drawing title
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Jacobs No.	B2325300	
Project/Work No.		
Drawing number	Sheet 2 of 11	Rev 0



- Legend**
- Order Limits
 - Construction compounds
- Receptor Type**
- Residential

Sheet 3 of 11: This is shown on Sheets 34, 35, 104, 105 and 106 in the Works Plan in Volume 2 Application Document 2.2 (Additional Submission AS-009)

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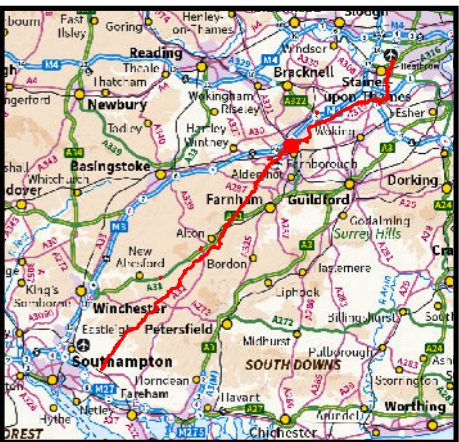
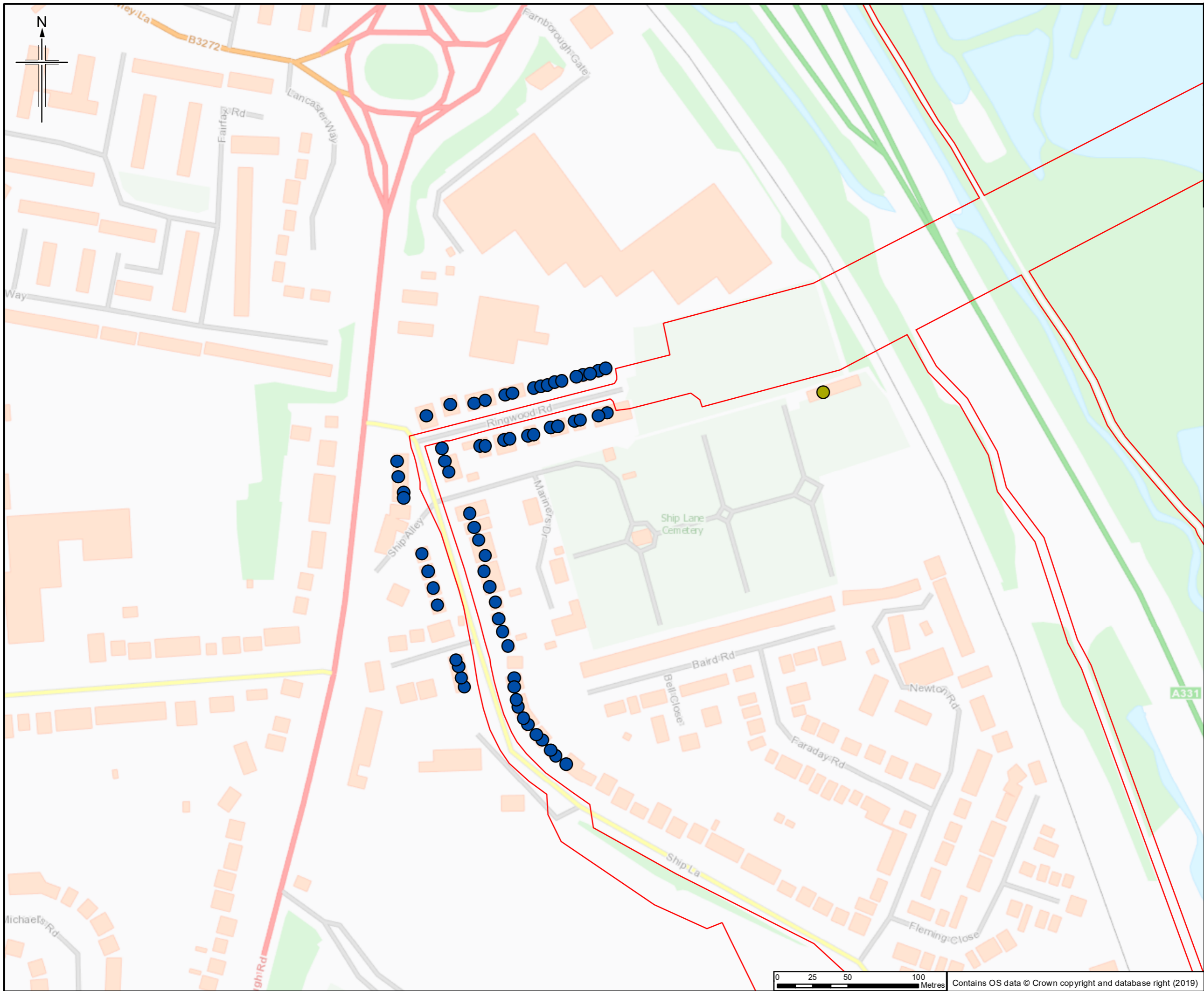
Drawing title
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ProjectWise No.		
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- Legend**
- Order Limits
 - Construction compounds
- Receptor Type**
- Community
 - Residential

Sheet 4 of 11: This is shown on Sheets 35, 107, 108 and 110 in the Works Plan in Volume 2 Application Document 2.2 (Additional Submission AS-009)

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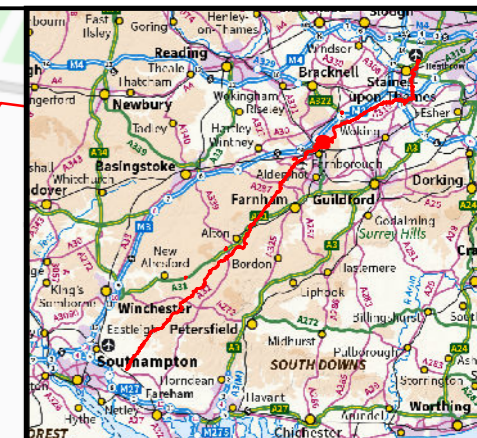
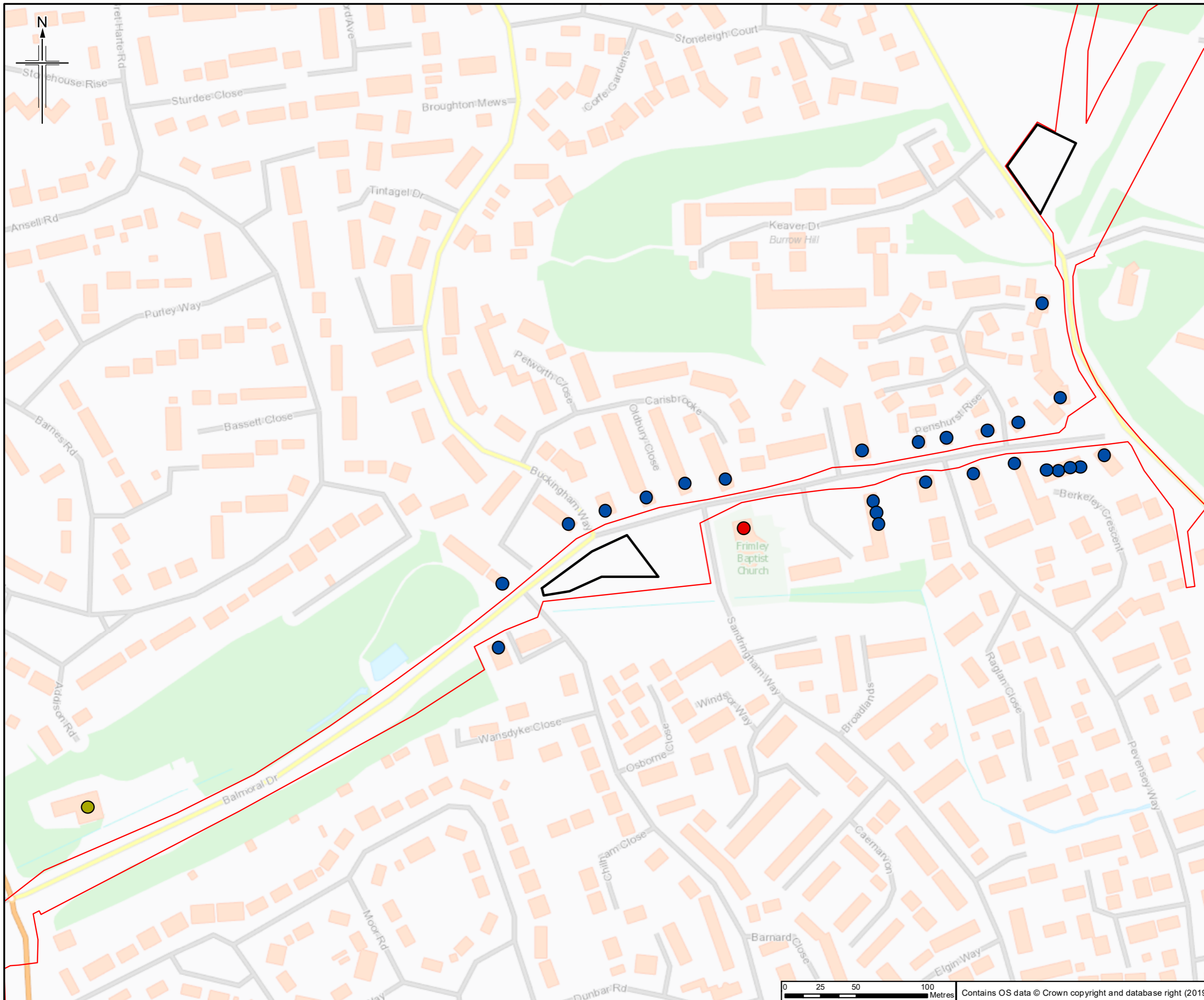
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Drawing title
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ProjectWise No.		
Drawing number	Sheet 4 of 11	Rev 0



- Legend**
- Order Limits
 - Construction compounds
- Receptor Type**
- Community
 - Religious
 - Residential

Sheet 5 of 11: This is shown on Sheets 36, 109, 112 and 113 in the Works Plan in Volume 2 Application Document 2.2 (Additional Submission AS-009)

0	28/01/2020	For Issue	JK	HRP	
Rev.	Rev. Date	Purpose of revision	Orig/Dwn	Checked	Rev'd / Apprv'd

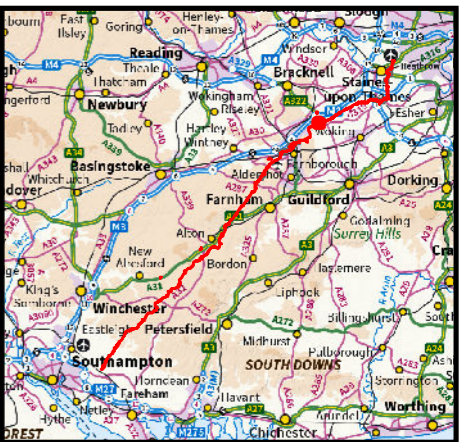
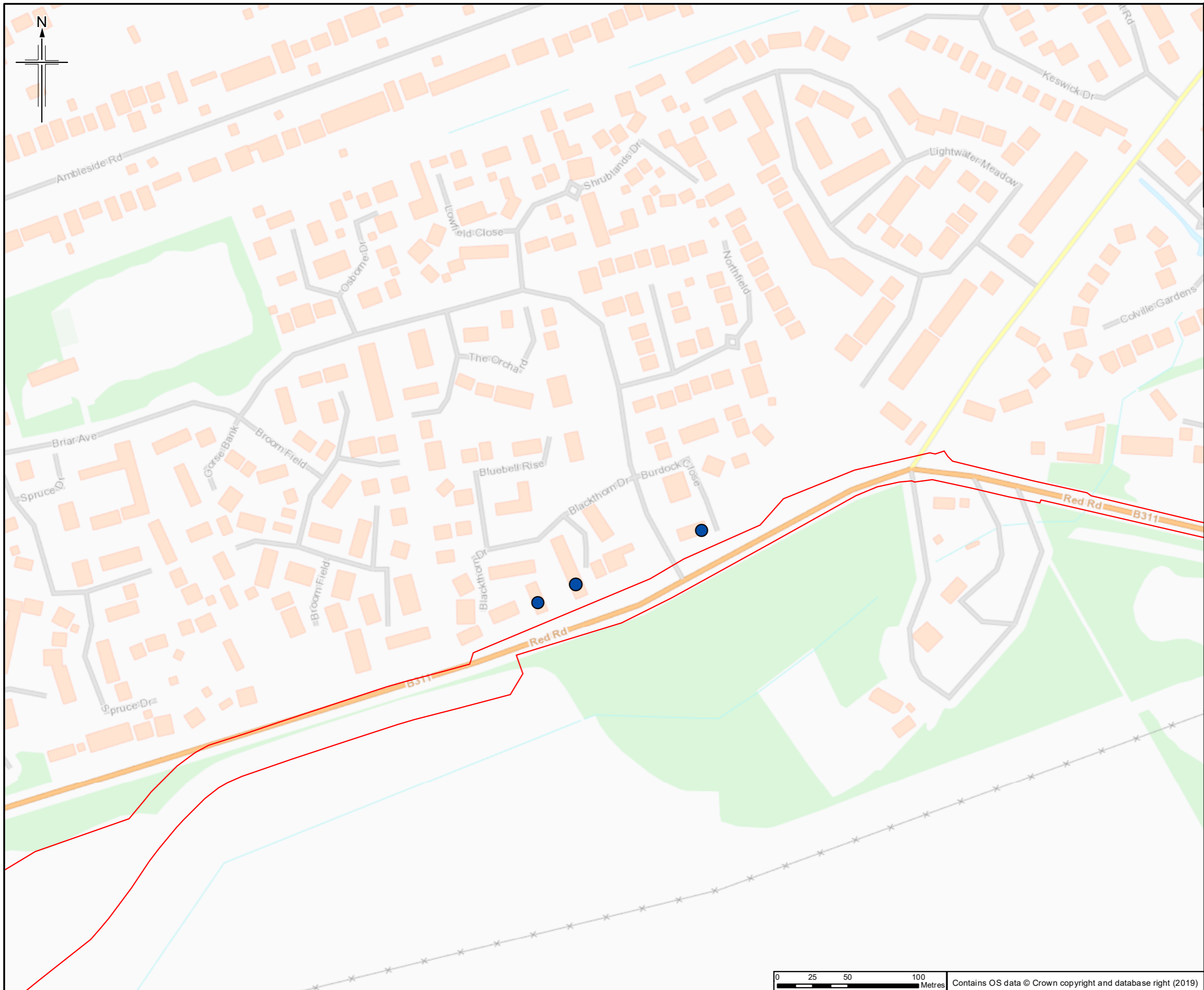
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Drawing title
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ProjectWise No.		
Drawing number	Sheet 5 of 11	Rev 0



- Legend**
- Order Limits
 - Construction compounds
- Receptor Type**
- Residential

Sheet 6 of 11: This is shown on Sheet 40 in the Works Plan in Volume 2 Application Document 2.2 (Additional Submission AS-009)

Rev.	Rev. Date	Purpose of revision	Orig/Dwn	Checkd	Rev'd	Apprv'd
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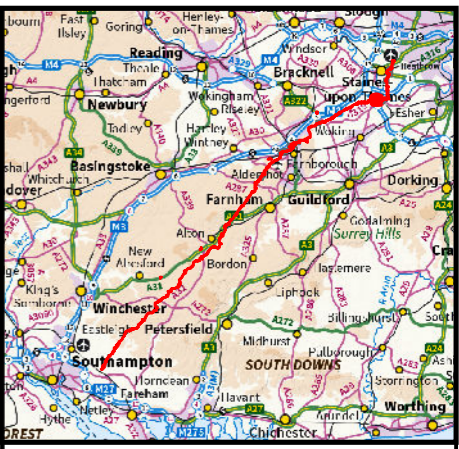
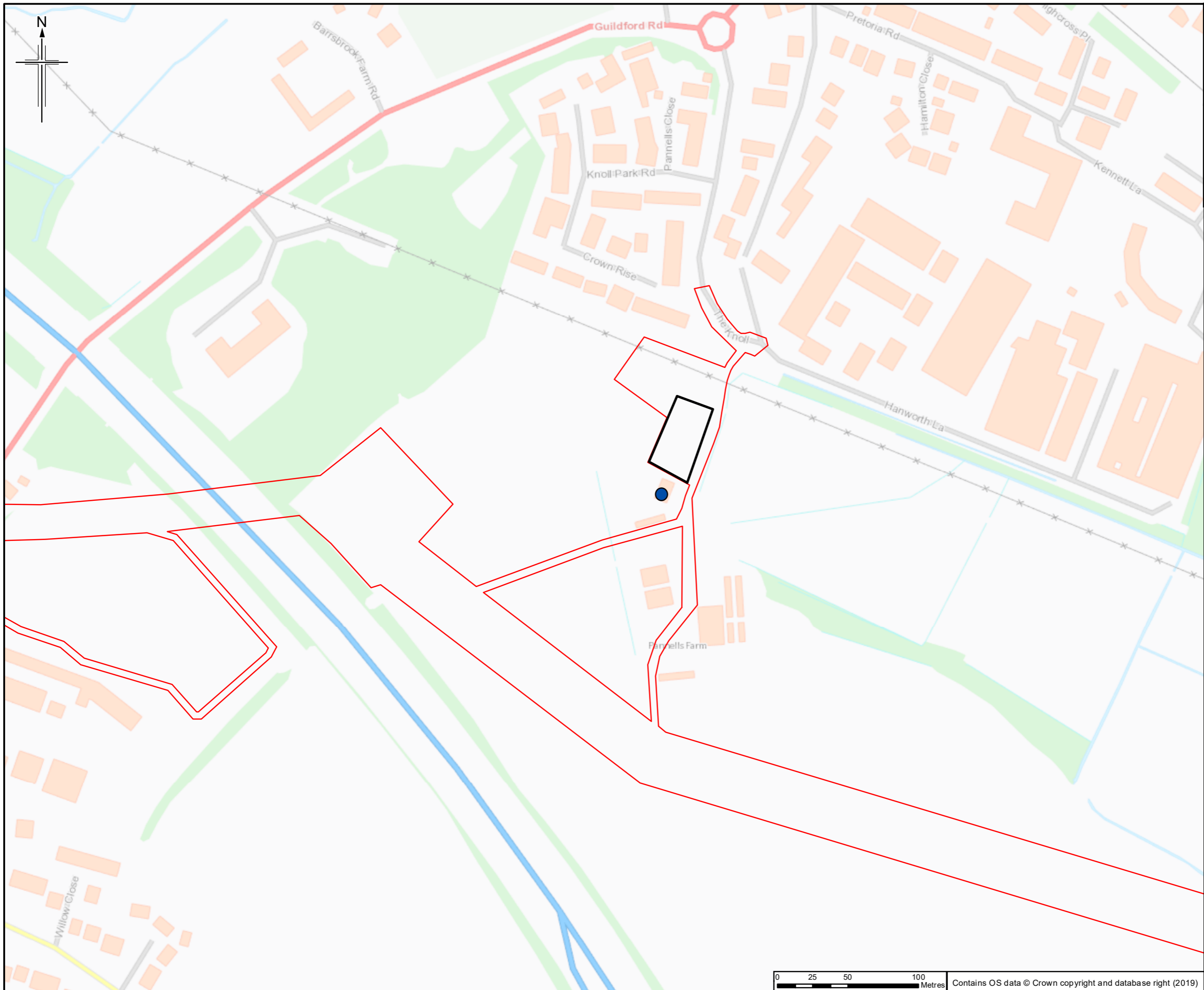
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Project:

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Drawing title:
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Drawing Status	For Issue	
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Jacobs No.	B2325300	
ProjectWise No.		
Drawing number	Sheet 6 of 11	Rev 0



- Legend**
- Order Limits
 - Construction compounds
- Receptor Type**
- Residential

Sheet 7 of 11: This is shown on Sheets 47 and 58 in the Works Plan in Volume 2 Application Document 2.2 (Additional Submission AS-009)

Rev.	Rev. Date	Purpose of revision	Orig/Dwn	Checked	Rev'd	Apprv'd
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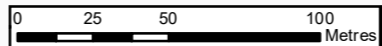
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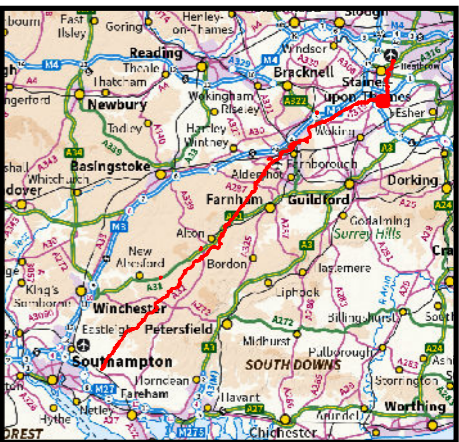
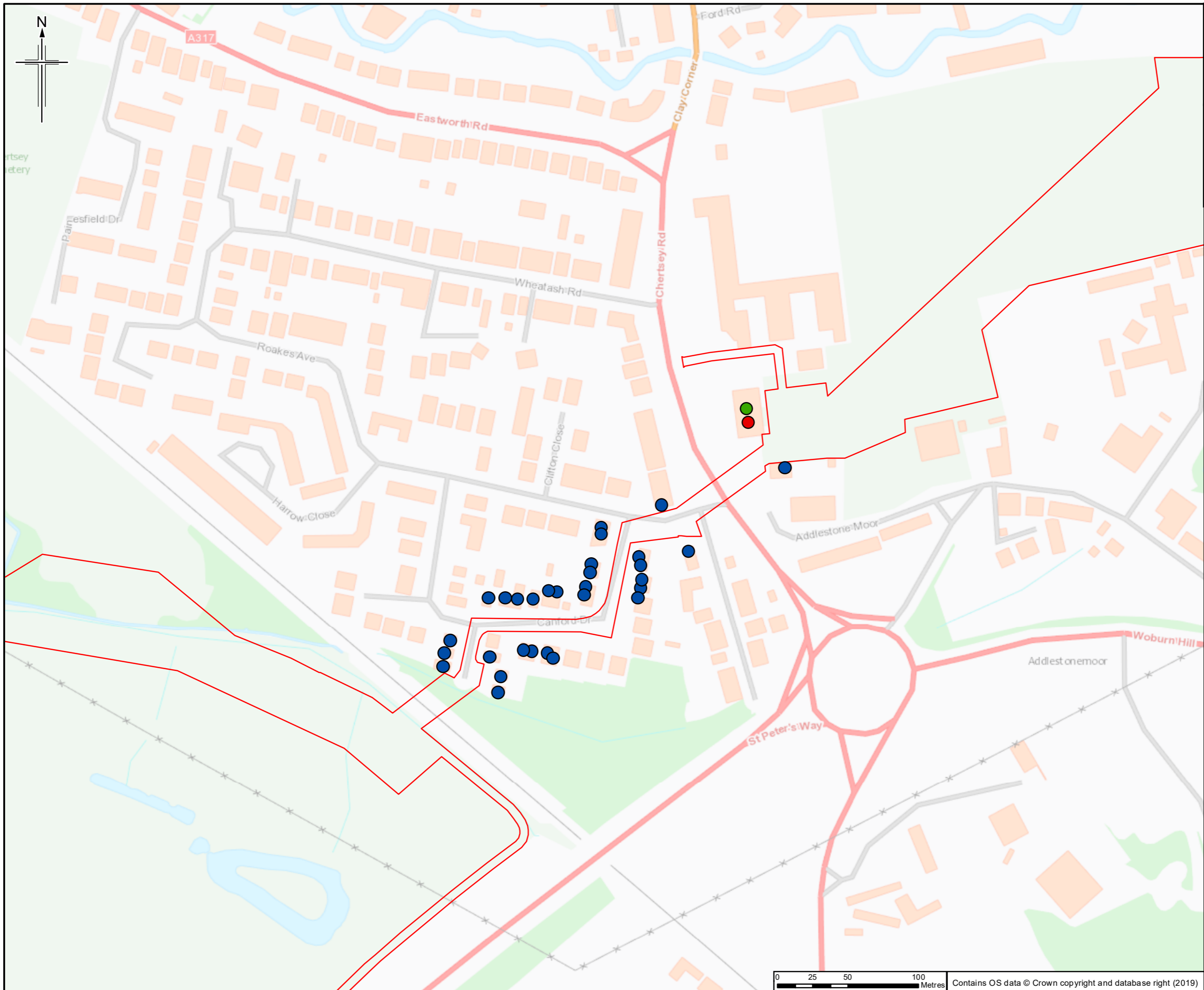
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- Legend**
- Order Limits
 - Construction compounds
- Receptor Type**
- Educational
 - Religious
 - Residential

Sheet 8 of 11: This is shown on Sheets 48, 49 and 116 in the Works Plan in Volume 2 Application Document 2.2 (Additional Submission AS-009)

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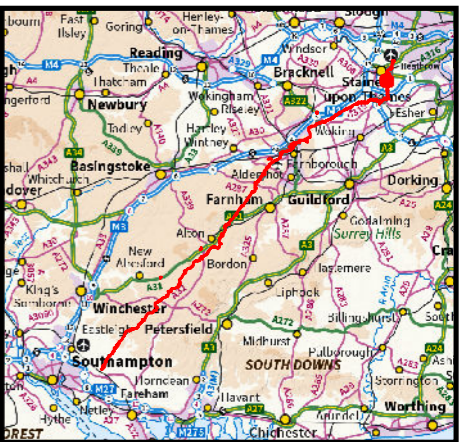
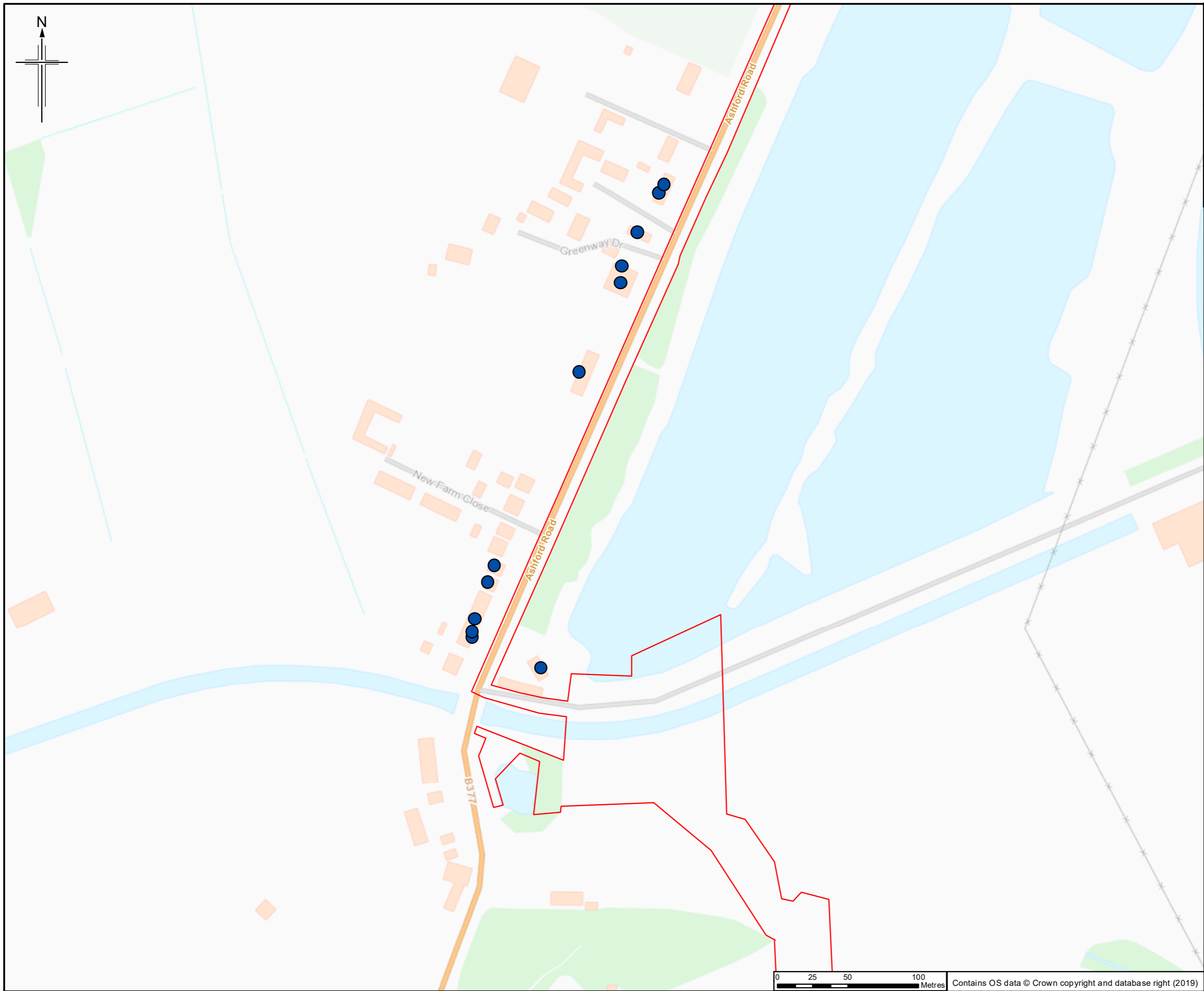
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ProjectWise No.		
Drawing number	Sheet 8 of 11	Rev 0



- Legend**
- Order Limits
 - Construction compounds
- Receptor Type**
- Residential

Sheet 9 of 11: This is shown on Sheet 51 in the Works Plan in Volume 2 Application Document 2.2 (Additional Submission AS-009)

Rev.	Rev. Date	Purpose of revision	Orig/Dwn	Checked	Rev'd	Apprv'd
0	28/01/2020	For Issue				

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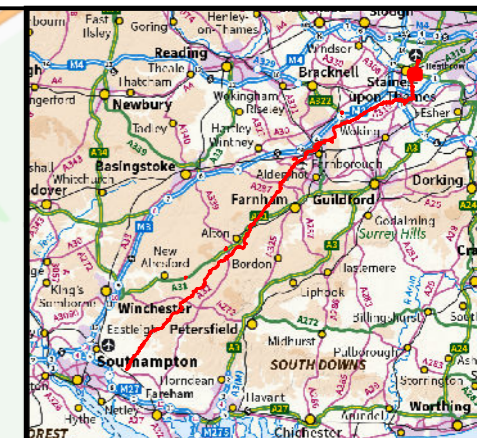
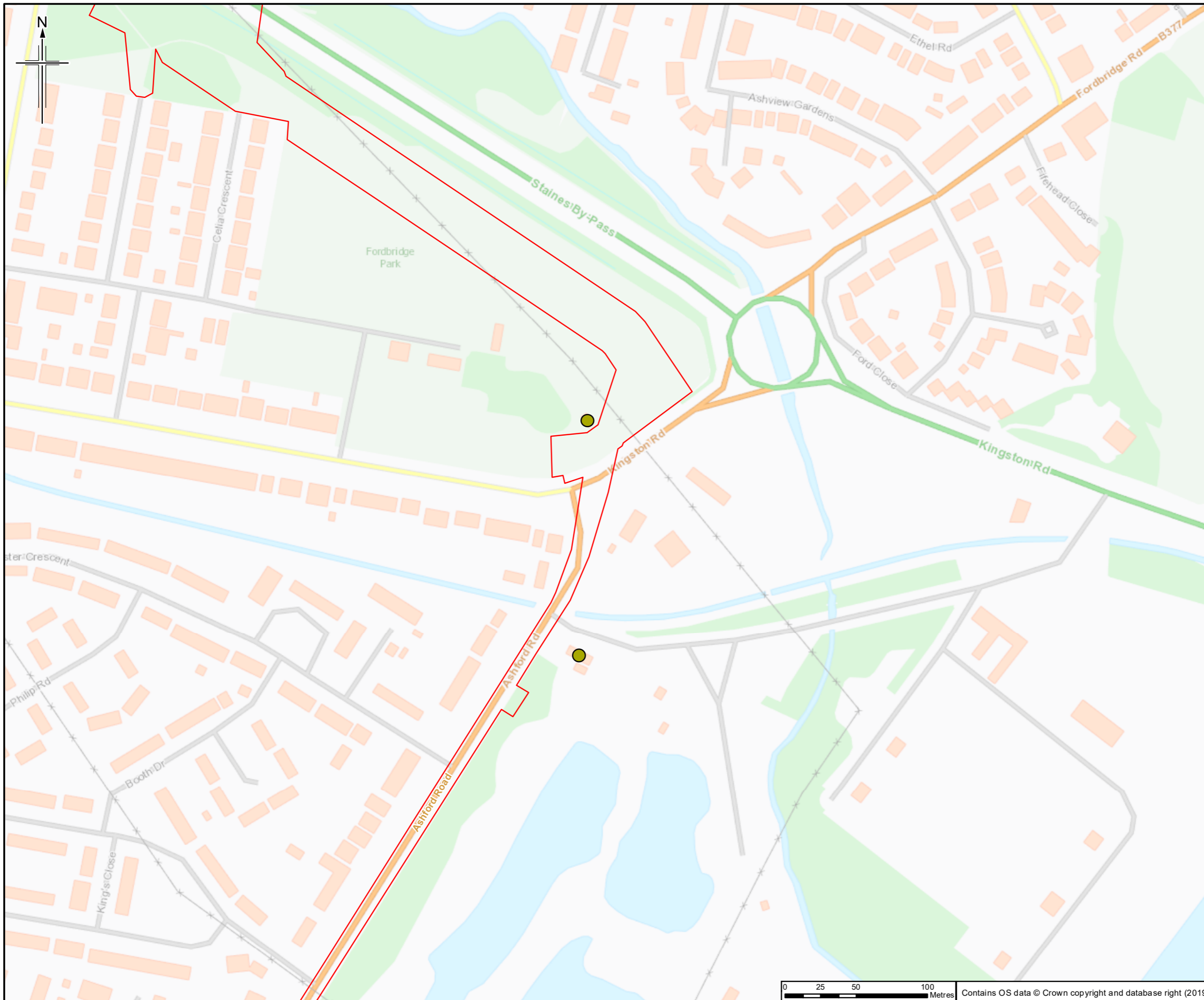
Project

Southampton to London Pipeline Project

Drawing title

PROPERTIES WITH POTENTIAL TO EXPERIENCE SIGNIFICANT NOISE EFFECTS DURING INSTALLATION (ASSUMING NO REDUCING MEASURES)

Drawing Status	For Issue	
Scale	1:2,500 @ A3	DO NOT SCALE
Jacobs No.	B2325300	
ProjectWise No.		
Drawing number	Sheet 9 of 11	Rev 0



- Legend**
- Order Limits
 - Construction compounds
- Receptor Type**
- Community

Sheet 10 of 11: This is shown on Sheets 51, 52, 119, 120 and 124 in the Works Plan in Volume 2 Application Document 2.2 (Additional Submission AS-009)

Rev.	Rev. Date	Purpose of revision	Orig/Dwn	Checked	Rev'd	Apprv'd
0	28/01/2020	For Issue			JK	HRP

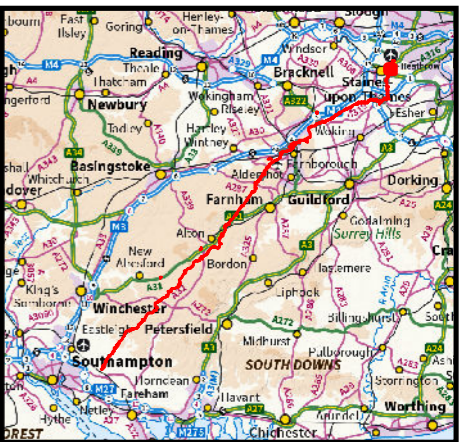
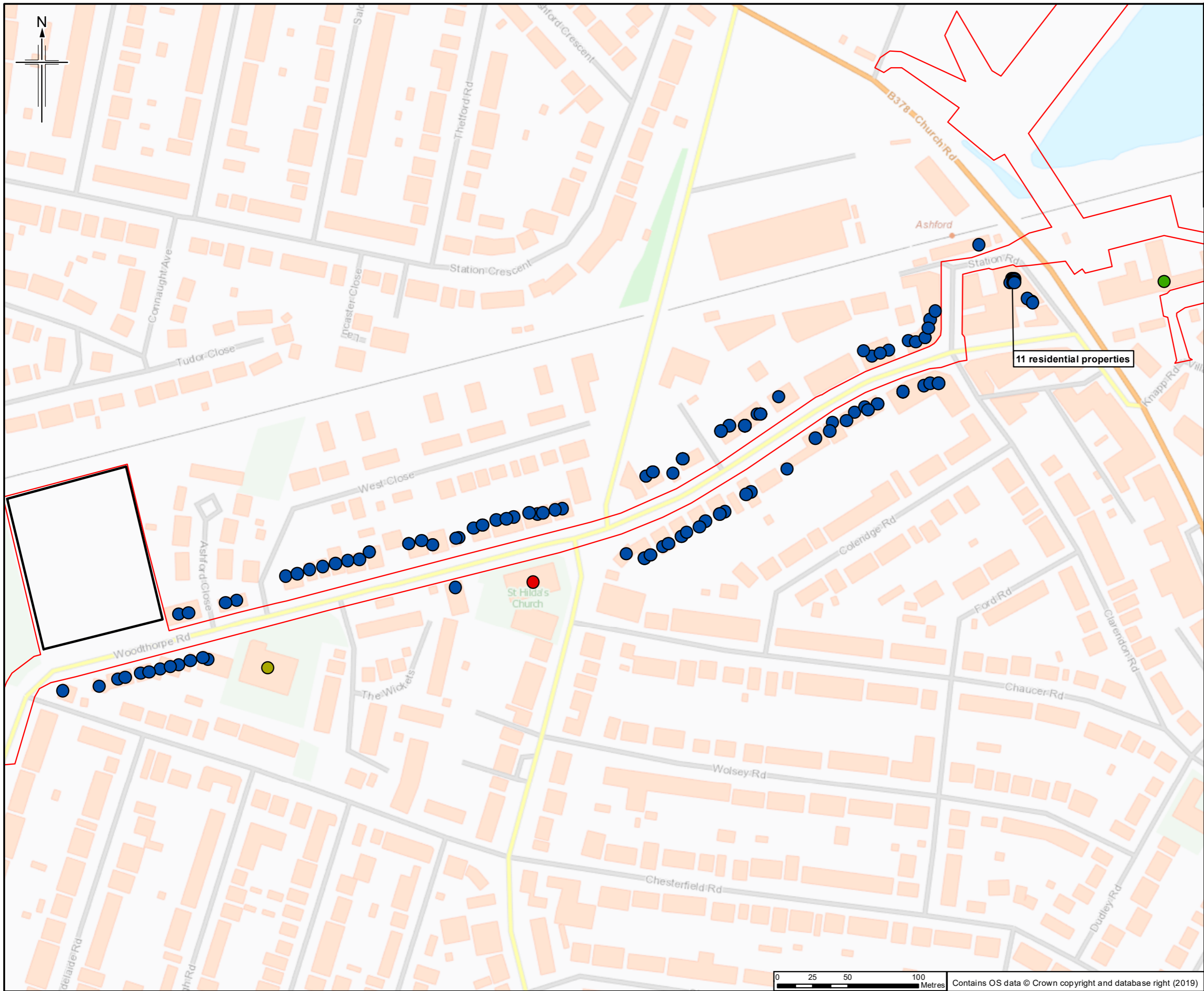
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Project:
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Drawing title:
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Scale	1:2,500 @ A3	DO NOT SCALE
Jacobs No.	B2325300	
ProjectWise No.		
Drawing number	Sheet 10 of 11	Rev 0



- Legend**
- Order Limits
 - Construction compounds
- Receptor Type**
- Community
 - Educational
 - Religious
 - Residential

11 residential properties

Sheet 11 of 11: This is shown on Sheets 52, 120, 121 and 122 in the Works Plan in Volume 2 Application Document 2.2 (Additional Submission AS-009)

Rev.	Rev. Date	Purpose of revision	Orig/Dwn	Checked	Rev'd	Apprv'd
0	28/01/2020	For Issue			JK	HRP

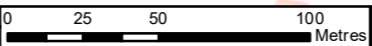
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Project
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Drawing title
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